IN TWO SECTIONS—SECTION ONE

THE PAPER INDUSTRY and PAPER WORLD

AN EDUCATIONAL NEWS MAGAZINE — APRIL, 1942

TECHNICAL DEPT.

APR 13 1942

PATTERSON MACHINERY

PAPER

With Production Soaring—
Costs Rising—
Prices Under Strict Control—

PATTERSON EQUIPMENT ..AS USUAL

SERVES THE INDUSTRY WITH TIME-PROVED *Economy and Dependability*

Among all the tribulations of the hard-pressed papermaker—a few bright spots remain. One of them: the steady performance of his Patterson Machinery, come what may!

Robert C—

Unipower Agitators

Type "HP" Side-entering Agitators

THE PATTERSON FOUNDRY & MACHINE CO.
EAST LIVERPOOL, OHIO, U.S.A.

√R √24' April-Sept 1942

THE WAR PROGRAM and Customer Defense

(An "Aditorial" by Seybold)

For an unknown period of time "Business as usual" has been set aside for the vital needs of a war economy. An unlimited emergency calls for unlimited co-operation.

Engineered for peace-time operations, this vast mechanism we call American Industry is being rapidly rebuilt for war.

Many parts of the peace-time machine are vital to building the new war machine. Other parts are not so vital and still others are not needed at all.

The unavoidable result is that some companies are thrown into high gear on war business and other companies into low gear on what peacetime business they can obtain.

SEYBOLD, like so many other manufacturers today, is called upon to assist in building the giant war machine needed for victory.

The experience and facilities acquired through years of manufacturing precision machinery for peace-time operations qualified Seybold eminently for the exacting requirements of war. SEYBOLD is doing everything possible to fulfill its responsibility.

But SEYBOLD recognizes another responsibility, namely *"Customer Defense"*.

While unavoidable conditions make it impossible to continue "shipments as usual" on *new machines, SEYBOLD SERVICE is functioning. Owners can look to Seybold to help keep their machines in efficient working order.

That, in brief, is what we mean by *Customer Defense.*

The SEYBOLD SERVICE organization in your vicinity stands ready to assist you in every possible way to "KEEP 'EM RUNNING".

*We still have new machines of certain kinds and sizes available.

SEYBOLD DIVISION

HARRIS-SEYBOLD-POTTER COMPANY
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DON'T WASTE POWER!

Past performance has proven that the replacement of old core gear drives with modern Beloit totally enclosed HYPOID and SPIRAL gear units has resulted in an average power saving of 15%. This power saving can be converted into higher production or lower operating costs. Beloit drives have many special features that make them efficient, smooth in operation and trouble free.

BELOIT IRON WORKS PAPER MACH'Y BELOIT, WIS. U.S.A.

Engineering MAKES THE MACHINE

BELOIT

..HOW TO SAVE TIME WHEN MAKING MILL LAYOUTS

NEW DIMENSION SHEETS ACCURATELY DRAWN TO THREE DIFFERENT SCALES NOW AVAILABLE WITHOUT CHARGE
Dilts
DATA
SHARTLE BROS. MACH. CO.

The important new B-C-S-D portfolio of dimension sheets will save you countless hours of unnecessary drafting time. And since each sheet is so complete, you get a more accurate, more comprehensive job in the bargain. ***Furthermore, this valuable new service is yours without cost.***

Here is the convenient way you use these B-C-S-D sheets. For example, you plan to add a new jordan. When making your layout, you need to know ***exactly*** where this jordan goes, how long it is, piping connections, and other details. So you place the correct Miami jordan data sheet under the tracing, move it to the correct scale, copy it exactly, and your jordan job is done.

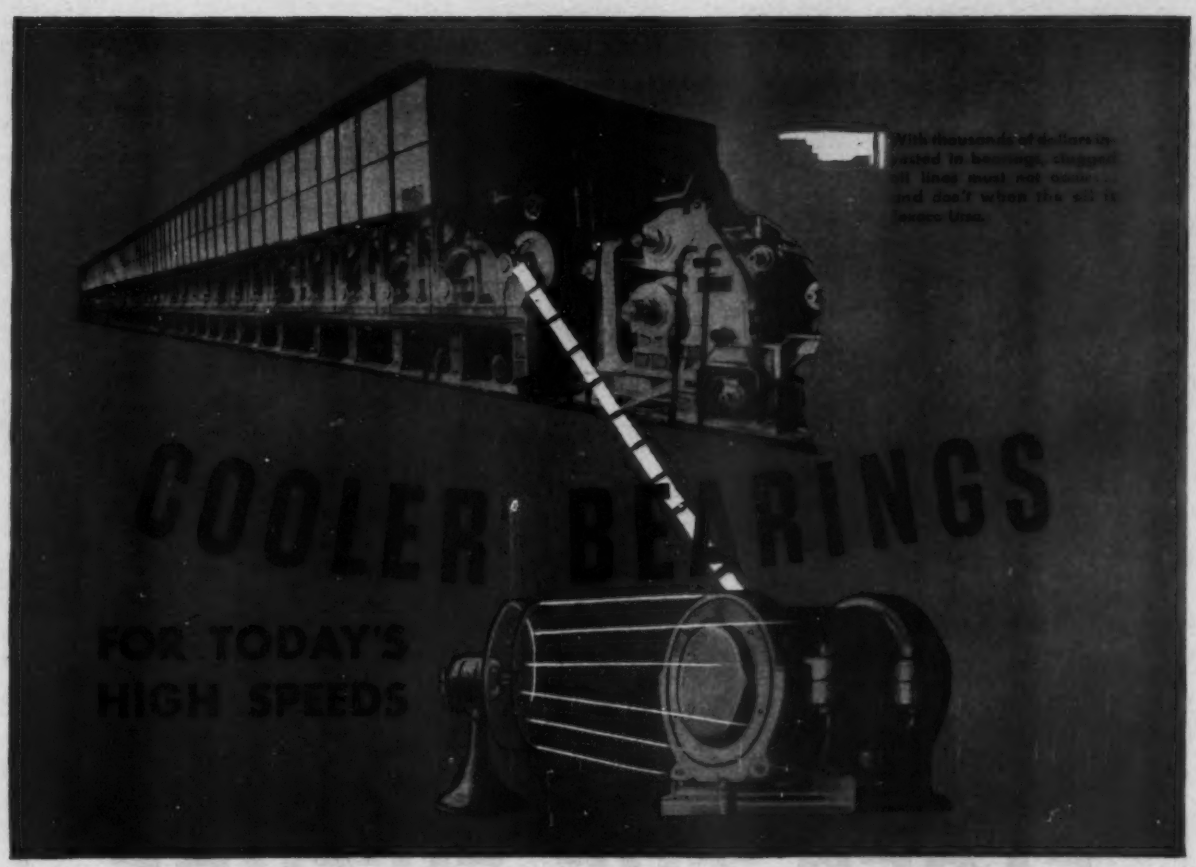
No longer do you have to scale large drawings to reduce to size required on your layout. These Black-Clawson-Shartle-Dilts sheets . . . and we give you a complete portfolio . . . take care of all details . . . and it doesn't cost you a dime.

These sheets can be used to check old layouts . . . to photograph for extra copies . . . for comparison purposes. You will use them constantly . . . and we are anxious to send you your set. Write us on your business letterhead.

THE BLACK-CLAWSON COMPANY, Hamilton, Ohio.
Shartle Division, Middletown, O., Dilts Division, Fulton, N. Y.

BLACK-CLAWSON • SHARTLE • DILTS

Dilts



In the face of faster paper-machine speeds and consequent stepped-up drying temperatures, your dryer-roll bearings will keep clean, run cooler and require less attention, when you use *Texaco Ursa Oils*.

Texaco Ursa Oils resist sludging and breakdown under today's high temperatures and heavy pressures. They keep oil lines open and assure the free flow of clean, cooling lubricant to each bearing.

The outstanding performance that has made Texaco preferred in the fields listed in the panel has made it preferred by prominent pulp and paper mills everywhere.

These Texaco users enjoy many benefits that can also be yours. A Texaco Lubrication Engineer will gladly cooperate . . . just phone the nearest of more than 2300 Texaco distribution points in the 48 States, or write:

The Texas Company, 135 East 42nd Street, New York, N. Y.

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★ More buses, more bus lines and more bus-miles are lubricated with Texaco than with any other brand.

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FOR YOUR ENJOYMENT

FRED ALLEN every Sunday night. See your local newspaper for time and station.

TEXACO

TEXACO Lubricants and Fuels

FOR THE PAPER INDUSTRY

RETURN METAL DRUMS PROMPTLY . . . thus helping to make present supply meet industry's needs and releasing metal for War Needs.

fifty years of Mathieson Chemicals

An American Pioneer FACES THE FUTURE

● Fifty years ago, when Mathieson was established, all of the bleaching powder and most of the alkali used in this country were imported from England. Since 1892, when Mathieson began pioneering the domestic manufacture of these and other products, its original plant at Saltville, Va., has grown into three modern manufacturing units covering hundreds of acres of ground.

In the laboratory, in the plant and in the field, Mathieson chemists and engineers have been leaders in research and in the development of new products . . . in the adaptation of both new and old products to more efficient use in industry . . . in the modern transportation and low-cost distribution of chemicals direct to the consumer.

Today, the towering stacks of three great Mathieson plants are dynamic evidence of a half century of progress in the production and distribution of quality chemicals. Strategically located at Saltville, Va., Niagara Falls, N.Y., and Lake Charles, La., these three manufacturing units are in a position to serve consumers of alkali and chlorine products throughout the chief industrial areas of the country.

In 1942, on its 50th Anniversary, The Mathieson Alkali Works is proud to rededicate its plants and personnel to a nation at war . . . confident that the vision and initiative which have made America strong will win through to victory.

MATHIESON CHEMICALS

CELEBRATING FIFTY YEARS OF SERVICE TO AMERICAN INDUSTRY AND PUBLIC HEALTH

THE MATHIESON ALKALI WORKS (INC.), 60 E. 42ND STREET, NEW YORK, N. Y.

THE PAPER INDUSTRY
and PAPER WORLD

APRIL, 1942 — VOLUME 24 — NUMBER 1

Member:
Audit Bureau of Circulations
Associated Business Papers, Inc.

Published monthly by

FRITZ PUBLICATIONS, INC.
59 East Van Buren Street
Chicago, Illinois

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Eastern Representative: L. D. Schnabel, 9 Rockefeller Plaza, New York, N. Y. Pacific Coast Representative: Norman C. Nourse & Associates, 1031 S. Broadway, Los Angeles, Calif. Entered as second class matter June 29, 1938, at the post office at Chicago, Ill., under the Act of March 3, 1879. Subscriptions in the United States, U. S. Possessions, Canada, Cuba and Mexico, $2.00 for one year, or $3.00 for two years. All other countries, $3.00 for one year, or $5.00 for two years.

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THE PAPER INDUSTRY and PAPER WORLD is indexed regularly in *The Industrial Arts Index*. An index to each volume is issued annually by the Publisher. The index to Volume 23 is Section Two of this issue.

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SINCE 1870

QUALITY FELTS
FOR
EVERY PULP &
PAPER-MAKING
PURPOSE

F. C. HUYCK & SONS

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I'M GLAD WE PUT IN THAT DURIRON EQUIPMENT!

DURIRON, a high-silicon iron, completely resistant to alum solutions and most commercial corrosives. Very hard and resistant to abrasion and scouring. Does not contaminate solutions handled.

DURICHLOR, similar to Duriron in physical characteristics. Especially recommended for chlorine bleaches and hydrochloric acid at all strengths and temperatures up to the boiling point.

DURIMET, a special low-carbon stainless steel, particularly recommended for use in the presence of hot weak sulfuric acid and hot sulfite liquors. Also equally resistant to caustics.

DURCO STAINLESS STEELS, low-carbon (0.07% maximum), of the chrome-nickel and chrome-iron series.

PRODUCTS include a wide range of standard equipment, such as pumps, valves, pipe and fittings, alum dissolving jets, ejectors, tank outlets, and laboratory equipment, as well as special castings to your order.

"There was a question at the time whether we should install corrosion-resistant Duriron or try to get along with a little cheaper product. We decided upon Duriron, and now with the mill running at capacity, when any delays or shutdowns would be most costly, we are certainly glad that we did."

IT is rare indeed when you are not forced to choose between a little better quality or a little lower price. How foolish it is to hesitate when the question concerns chemical-handling equipment.

For corrosion is an ever-present saboteur. It draws no distinction between war and peace. And the leading pulp and paper mills which have been installing Durco equipment for a quarter of a century have had ample proof that the safest insurance against corrosion is in the inherent corrosion-resisting qualities of the equipment itself.

Combating corrosion is a specialized business. Our extensive facilities and highly trained personnel are made available to you through standard models of corrosion-resisting equipment or in special castings made from your own designs.

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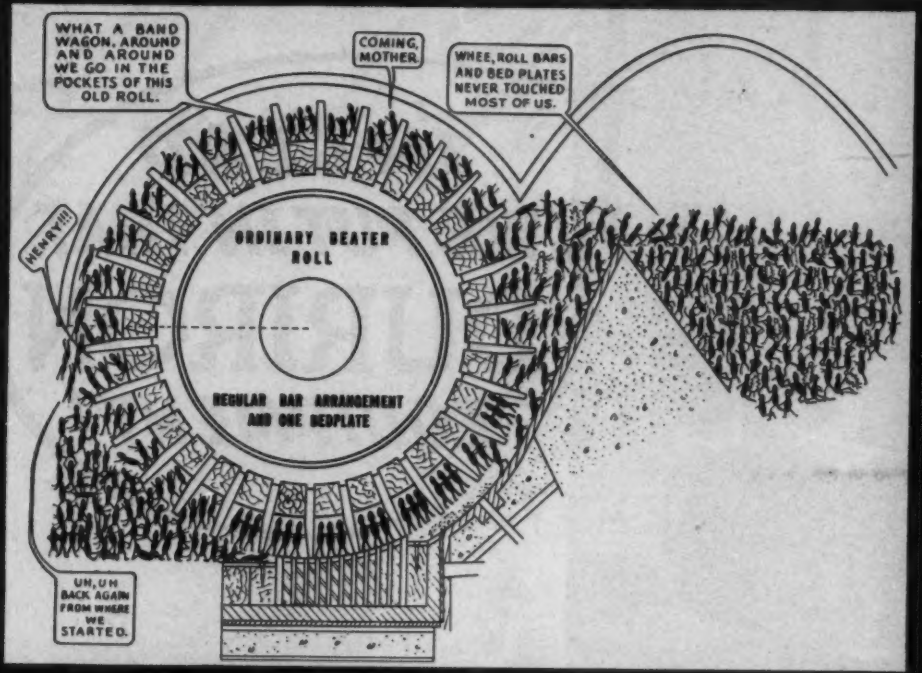
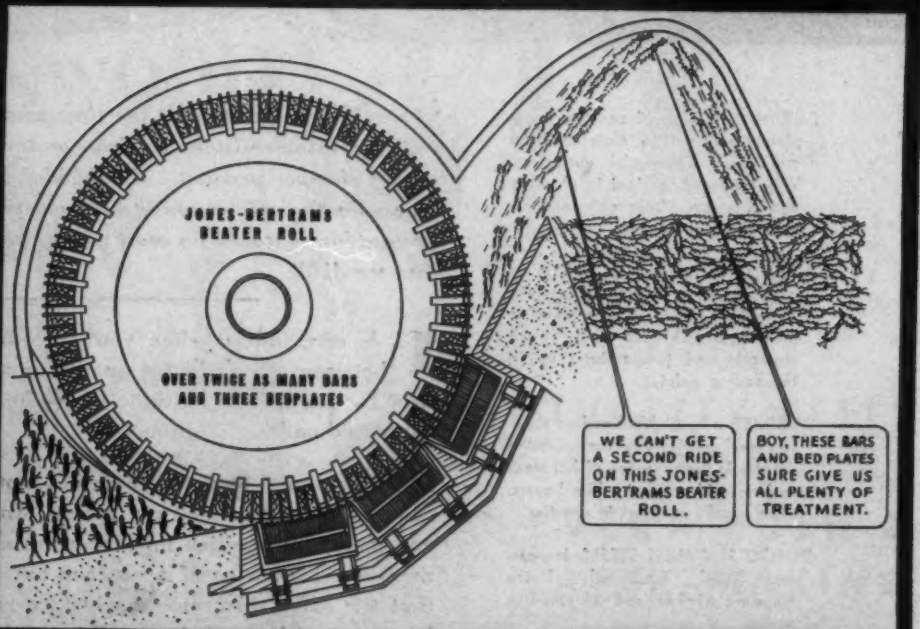
THE DURIRON COMPANY, INC. DAYTON, OHIO, U.S.A.


WHAT A BAND WAGON. AROUND AND AROUND WE GO IN THE POCKETS OF THIS OLD ROLL.
COMING, MOTHER.
WHEE, ROLL BARS AND BED PLATES NEVER TOUCHED MOST OF US.
HENRY!!!
ORDINARY BEATER ROLL
REGULAR BAR ARRANGEMENT AND ONE BEDPLATE
UH, UH BACK AGAIN FROM WHERE WE STARTED.

With the roll in a conventional beater turning and turning, submerged in stock, fibres are not treated uniformly . . . power is wasted . . . and more beating time is required.

Uniform treatment of all fibres in the Jones-Bertrams Patent Beater is accomplished by the many roll and bedplate bars. Its particular design prevents stock being carried over roll . . . effects power savings and shorter beating cycles.

Duplication of beating cycles is assured by automatic adjustment and control of roll setting.


JONES-BERTRAMS BEATER ROLL
OVER TWICE AS MANY BARS AND THREE BEDPLATES
WE CAN'T GET A SECOND RIDE ON THIS JONES-BERTRAMS BEATER ROLL.
BOY, THESE BARS AND BED PLATES SURE GIVE US ALL PLENTY OF TREATMENT.

Jones

E. D. JONES & SONS COMPANY-PITTSFIELD, MASS.

Builders of Quality Machinery for Paper Mills

Establishing...

PLIABILITY IN PAPER

with Trouble-Free Specialty Products

New developments improve creasing...scoring...folding... and crimping of paper and paper board

WAX IN ROSIN SIZES SOLVES IMPORTANT PROBLEM. To economically attain improved pliability without sacrificing other essential characteristics such as water resistance and strength is partially a matter of determining upon a suitable sizing formula. Since rosin size alone will tend to stiffen paper, the addition of a satisfactory modifying ingredient to the sizing formula is often made. A wax size in proper proportion, Cyanamid paper technicians have found, will solve the problem nicely. Cyanamid will be glad to assist you to determine the proper grade and percentage of wax size required in relation to the particular paper and methods of mill operation.

SIZING KRAFT PULP FOR PLIABILITY

The use of wax size usually not exceeding .2% based on the dry weight of the fiber, thereby increasing the pliability of kraft pulp paper, has been a factor in the increasing use of kraft pulp throughout the industry. Details and recommendations may be obtained by addressing Cyanamid.

FLEXIBILITY VS. RELATIVE HUMIDITY

Wax sizes offset the tendencies of paper to crack and break due to loss in moisture content. This is a particularly important advantage in cold weather when indoor humidities are likely to be low.

Developing the means and methods to improve the manufacture and broaden the usefulness of paper and paper products is the service that Cyanamid paper technicians, field men of broad practical experience, extend to the paper industry. Backed by Cyanamid laboratory research and development these men are available for consultation on any problem involving use of paper chemicals.

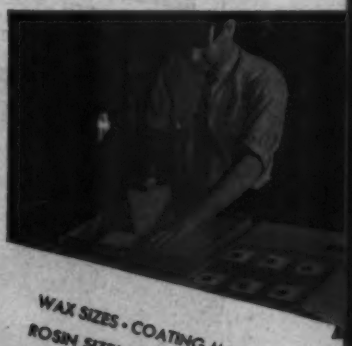
If you have a technical problem concerning flexibility — or any other subject related to the use of chemicals — feel free to call on us for further information. It involves no obligation.

Wax size used in conjunction with rosin size keeps raw stock flexible so that it will handle well on the festoons of the coating machine and in the printing to follow.

Hanging papers will exhibit high water resistance and flexibility to conform to corners and other contours when one of the newer wax sizes is used with the rosin size during manufacture.

Use of wax in sizes makes writing surfaces more resistant to pen and ink. Wax sizes are particularly applicable to envelope papers that should fold without flat surfaces or cracks.

Box boards and die pressed products handle and shape to the die more readily by the use of wax as a plasticiser in the sizing operation. A flexible size also protects the water resistance of the paper board at folded edges and corners.



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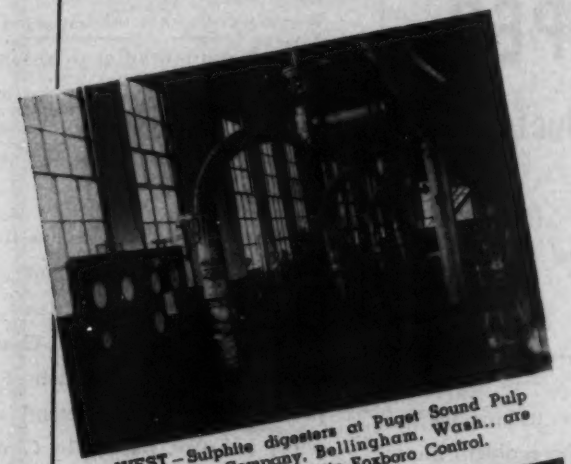
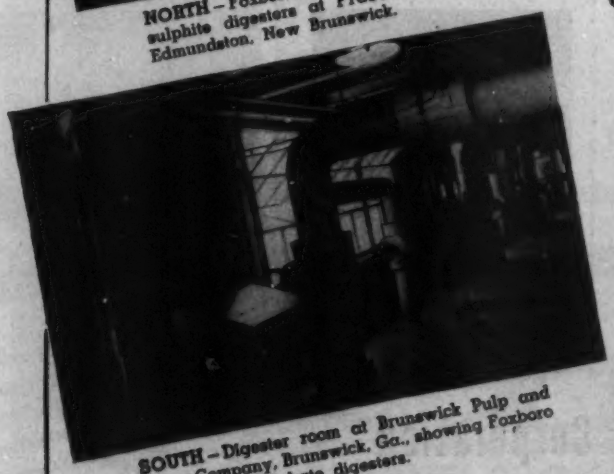
East — West — North — South

HIGHER OUTPUT per DIGESTER!



WEST – Sulphite digesters at Puget Sound Pulp and Timber Company, Bellingham, Wash., are under complete, automatic Foxboro Control.

NORTH – Foxboro Control Instrumentation for sulphite digesters at Fraser Companies, Ltd., Edmundston, New Brunswick.



SOUTH – Digester room at Brunswick Pulp and Paper Company, Brunswick, Ga., showing Foxboro Controls for sulphate digesters.

There's no simpler way to help fill wartime shortages of pulp than by installing accurate Foxboro Cooking Controllers. During the past two years, 46 pulp manufacturers throughout the United States and Canada have stepped-up their production by applying Foxboro Instruments to digesters.

Foxboro Digester Control is a typical example of Foxboro Creative Instrumentation . . . original engineering that applies instruments to make processes work better. Designed by men with years of actual paper-making experience, Foxboro Digester Control automatically holds temperatures and pressures at the optimums . . . boosts output . . . increases long-fibre count . . . saves chemicals . . . speeds the cook.

What's more, it insures uniform operation . . . even with new unskilled workers. For, it automatically controls each cook from start to finish, without intermediate adjustments!

Write for detailed information on Foxboro Control for your digesters. **The Foxboro Company, 158 Neponset Avenue, Foxboro, Mass., U. S. A.** Branches in principal cities of United States and Canada.

FOXBORO

Reg. U. S. Pat. Off.

Creative Instrumentation

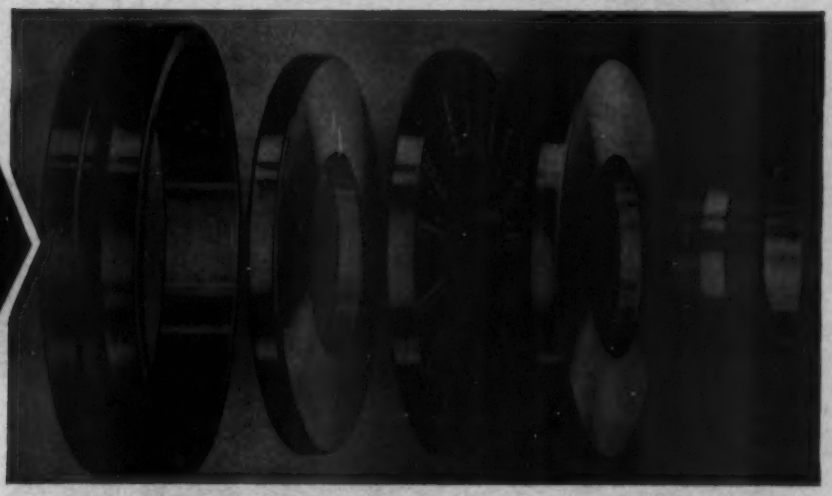
EAST — Foxboro Cooking Control installations for sulphite digesters at Penobscot Chemical Fibre Company, Great Works, Me.

Cut the Load in TWO PARTS...

Stop Overworking Your Bearings

during the Non-Stop, 168 Hour Week

It's a common mistake to think of thrust loads as part of the main load and to lump them all on combination radial-and-thrust bearings. But it's tough on bearings, tough on power sources, tough on lubrication and maintenance men, and it *shortens bearing life*—also cuts the load that can be carried in given dimensional limits.



Top—*Type SDT Thrust Bearing—double-acting.* Above—*Type MN Double Width Radial Bearing.*

SPLIT THE LOAD and SAVE THE BEARING

The Rollway practice of splitting the load into two simple components of *pure radial* and *pure thrust* greatly lengthens bearing life. It increases the speed at which maximum bearing life is possible, improves the shock-absorbing capacity of the bearings, reduces starting torque.

Rollway specializes in solid cylindrical rollers exclusively. That means greater mass per unit of load and uniform cross-section of rolling element. It means that all loads are carried at right angles to the roller axis—there's no pinching or wedging action.

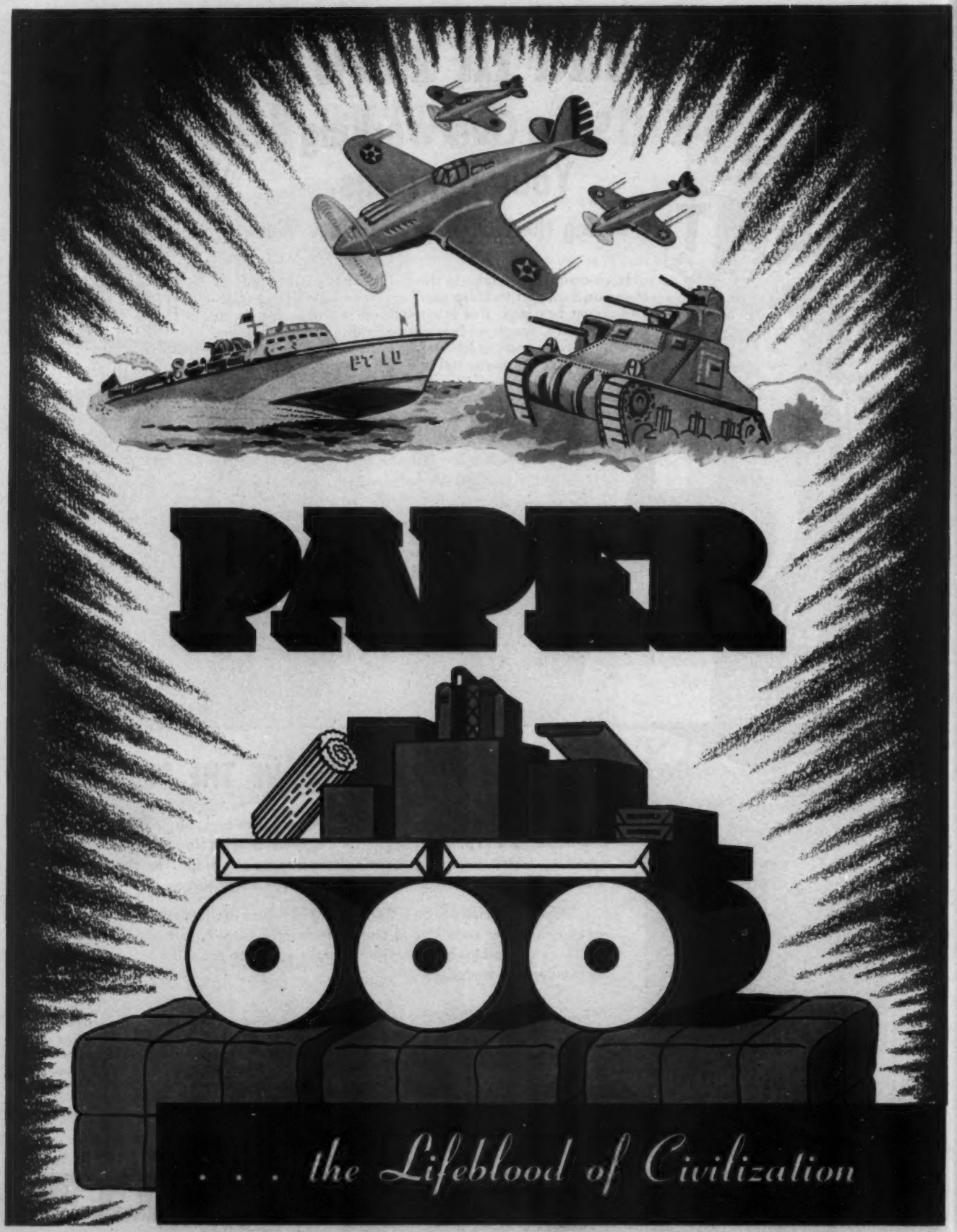
Engineered to Provide Standard Sizes for Most Applications

Engineered for thousands of applications in various industries, Rollway's wide range of series and types provides standard metric dimensions and tolerances for practically every design. Hence you insure easier replacement or change-over and lower cost. *Send us your drawings—particularly your conversions—for free engineering analysis and bearing recommendations.*

ROLLWAY

BEARING COMPANY, INC., SYRACUSE, N. Y.

BUILDING HEAVY-DUTY BEARINGS SINCE 1908 **BEARINGS**


PAPER
. . . the Lifeblood of Civilization

TRADE WINDS

Government Orders Allocation of Wood Pulp

• Allocation of all wood pulp produced or consumed in the United States was approved on March 12 by the War Production Board, effective May 1. The American Paper and Pulp Association has sent to all paper and pulp manufacturers a copy of the order together with a letter (reproduced herewith) from James S. Knowlson, director of industry operations, War Production Board, highlighting the salient points of the order.

To All Producers and Purchasers of Wood Pulp:

Today I am filing for publication in the Federal Register, General Preference Order M-93.

Enclosed is a copy of the order and copies of the forms to be used by purchasers and consumers, together with specific instructions to be followed in the use of such forms.

General Preference Order M-93 provides that no producer shall make, and no person accept, delivery of wood pulp without approval by the Director of Industry Operations. Deliveries by persons having wood pulp on inventory are included, whether such persons be producers or not. Wood pulp arriving at its first destination in the United States from any foreign source, such as Canada, at or after the noon (Eastern War Time) of May 1, 1942, is also included.

Under this Order, it will be necessary for all commitments for wood pulp to be made on a monthly basis. Only in exceptional cases will contracts or purchase orders for shipments to be made over a period longer than a month be approved.

The Order further provides that the Director of Industry Operations may require each producer to withhold from his production of wood pulp whatever portion thereof the Director may determine, and to hold the same subject to further order. This requirement will be kept at a minimum so as to interfere as little as possible with the normal marketing policies of the industry. It is intended that all integrated companies shall continue to supply their regular customers as heretofore.

With respect to intra-company deliveries, it is specifically provided that, in the absence of specific direction otherwise, the provisions of the order apply to deliveries to affiliates and subsidiaries, and to deliver from one branch, division, or other section of a single business enterprise to another branch, division or section under the same ownership or control.

It is intended that in the industry's operations under this order, all persons who use or can use in their products any proportion of fibrous materials other than wood pulp, hereafter use at least the same proportion of other fibrous materials as at present and whenever possible, increase the proportion of other fibrous materials used.

For your information, attention is called to the following provision of the Act of Congress approved May 31, 1941 (Public No. 89, 77th Congress): "No person, firm, or corporation shall be held liable for damages or penalties for any default under any contract or order which shall result directly or indirectly from his compliance with any rule, regulation, or order issued under this section."

You will be notified from time to time of rulings and interpretations applying to this Order. Any question which may arise in connection with your compliance with the terms of this order should be addressed to:

David Winton, chief, Pulp and Paper Branch, Fifth Wing, 2nd Floor, Temporary Bldg. "E," Washington, D. C.

This letter does not purport to be a complete summary of General Preference Order M-93. You must read the order carefully in its entirety in order to understand fully its provisions and their effect upon your business and your relations with your customers.

(Signed) James S. Knowlson
Director of Industry Operations

◆

Wood Pulp Allocation Industry Advisory Committee

The American Paper and Pulp Association officially announces that the Bureau of Industry Advisory Committee, War Production Board on March 30 formed the Wood Pulp Allocation Industry Advisory Committee. David Graham is the presiding officer and the members of the committee are:

G. B. Gibson, Union Bag and Paper Corporation
George E. Dyke, Robert Gair Company, Inc.
H. O. Nichols, Crown-Zellerbach Corporation
N. L. Nourse, Brown Company
L. K. Larson, Weyerhaeuser Timber Company
Charles Conrad, Rayonier, Inc.
S. E. Kay, International Paper Company
Rex W. Hovey, Oxford Paper Company
H. H. Hanson, W. C. Hamilton & Sons, Inc.
Dwight L. Stocker, Michigan Paper Company
Douglas Crocker, Crocker, Burbank & Company
Amor Hollingsworth, Penobscot Chemical Fibre Company
F. W. Brainerd, Scott Paper Company

New addition to Institute of Paper Chemistry now under construction.

FOURTH ADDITION TO INSTITUTE IS NOW UNDER WAY

The fourth major addition to the Institute of Paper Chemistry, in its twelfth year of existence, is rapidly being constructed. This latest addition is exactly the same size as the original building. It is of stone, steel, and concrete construction, and conforms to the other buildings of the Institute. It will be joined to the west of the third unit built, and will be connected to the Kimberly Memorial Library by a tunnel which will permit a person to travel from one unit to any other without going outside.

When completed, the physics equipment will be moved into it. This includes the new electron microscope, which will be housed in a separate room in the basement. This floor will also include a humidity room, the third at the Institute. The second floor will have a large room suitable for scientific meetings and lectures for large groups. Laboratories and offices will occupy a large part of the building.

◆

ENGINEERS HEAR PAUL WEST TRACE PAPER PRODUCTION

Paper mills of the United States during the second World War are producing 6,000 times as much paper as during Revolutionary War times, Paul H. West, technical Director of the Thilmany Pulp and Paper Company, Kaukauna, Wisconsin, told the Engineering Society of Wisconsin at the 34th annual convention of the organization held in Appleton, Wisconsin, on March 26 and 27. Speaking on the subject "The Paper Industry and Its Relation to the War," Mr. West traced the development of paper production from its Revolutionary days, when the tonnage totaled about 3,000 tons, to 1941, when the all time peak of 18,000,000 tons was reached. This latter figure is 20 per cent over that produced in 1940.

Paper in the early days played a very minor role, especially in domestic production. In fact, according to Mr. West, the original Declaration of Independence was written on paper of Dutch origin. The final draft, however, was written on parchment. However, today the Government is using 52 per cent of the paperboard, 80 per cent of waterproof, and 20 per cent of all kraft produced. Probably by the end of the year, the Government wiil be using 50 per cent of the kraft. In showing the extent to which the Government is using paper, the speaker stated that the government demand for mimeograph paper now is greater than all that was produced prior to the war. 1,000 tons of paper was used in the first draft registration alone, and with the ever-increasing use of pulp for explosives, the mills will find the demand greater and greater. Blueprint paper also is much in demand by the federal forces, and the speaker stated that on an average 15 tons of blueprint paper is used in making drawings before the construction of a battleship is even started. Much paper stock is now being used for camouflage purposes. Despite the tremendous increase and demand for paper, the industry is keeping pretty well up with the requirements. In fact, the pulp production went up from 5½ million tons to 8 million tons since the supply of foreign pulp was cut off.

CAN. NEWSPRINT MILLS SPENDING FOR EXPANSION

Many West Coast newsprint mills in Canada are developing and enlarging their facilities.

Powell River Company, Powell River, is erecting a new sulphite plant at a cost of a million dollars, and the two mills at Port Alice and Woodfibre of the British Columbia Pulp and Paper Company are being improved at a cost of $800,000.

The Westminster Paper Company, New Westminster, recently completed a $200,000 extension. Sidney Roofing Company, Victoria, spent $150,000 to enlarge its plant, and the Sorg Pulp Company, which took over Port Mellon Operating Company's holdings on Howe Sound, is currently spending $1,000,000 to double present production.

◆

RATE INCREASE AFFECTS NEWSP'T FROM DOMINION

As a result of the boost in freight rates on railway traffic between Canada and the United States, Dominion newsprint manufacturers will have slightly more than 50 cents a ton added to their costs.

The average freight rate per ton of newsprint shipped by rail to the United States from a Canadian mill is $9. The new order permits an increase in the freight rate up to 6 per cent. On the basis of shipments last year, the new order of the Board of Transport Commissioners and the Interstate Commerce Commission adds approximately $1,500,000 annually to the newsprint manufacturers' freight bill.

PAPER · · · America's 6th Industry

PAPER GOES TO SEA

(NEWS ITEM: *Government statisticians calculate that 100 tons of Paper are needed to produce a battleship.*)

War on the sea begins on land . . . in the mighty forests of the great northwest . . . in the steel mills of Pennsylvania . . . in defense plants all over America . . . in great Pulp and Paper mills working at top-notch efficiency to produce more paper than ever before in history.

Paper serves a vital need on every ship in our great two-ocean Navy—battleship, cruiser, destroyer—and on every merchant ship in the new Liberty Fleet.

In the War emergency, many new and wider uses are being found for Paper products, often releasing other materials for defense needs. In one industry, cork requirements have been reduced about 50 per cent with materials that are basically paper in combination with synthetic materials.

With the Federal Government requiring increased Paper tonnages amounting to as much as 25 to 50 per cent in some grades of Paper, all of the energies of Puseyjones engineers are dedicated to the task of eliminating production bottlenecks.

Recent improvements in the combination Puseyjones Steam Joint and dual action Condensate Evacuator increase production by removing all condensate from the drying cylinders under all operating conditions. Increased drying rate is obtained without raising the steam pressure, also a considerable reduction in power.

With the improved Puseyjones Steam Joint, replacement of all parts subject to wear may be made in most cases without shutdown. Over 300 installed on existing machines during the past six months and 200 now on order for new and old machines.

Keeping paper production at the point of highest efficiency is not only essential to Victory, but also best for the tremendous competition coming after the present emergency is over.

THE PUSEY AND JONES CORPORATION

Established 1848. Builders of Paper-Making Machinery

Wilmington, Delaware, U.S.A.

THE SIGN OF TRADE MARK SUPERIOR QUALITY

Washington News

HOWARD COONLEY TO HEAD WPB BRANCH

Taking a leave of absence from his duties as chairman of the board of the Walworth Company, Howard Coonley was called to Washington early last month to co-ordinate and implement the simplification and standardization program of WPB. Mr. Coonley is a former president of the National Association of Manufacturers and of the American Standards Association.

He will head one of the branches of the Bureau of Industrial Conservation, and all simplification activities in WPB, including those involving industrial standards, will clear through this division. It is planned that the work will be carried on in co-operation with the Industrial Advisory Committee established in the Division of Industry Operations. Mr. Coonley has accepted this appointment for three months.

▶▶▶ THE CHARGE OF suppressing competition made by the Federal Trade Commission against the manufacturers of cylindrical liquid containers has been denied.

DAVID J. WINTON MEETS WITH APPA EXEC. COMMITTEE

A frank discussion of the paper industry's efforts to contribute to a maximum degree to the nation's war effort and to secure the best type of organizational structure to achieve this objective was held when the executive committee of A.P.P.A. met with David J. Winton, new chief of the Pulp and Paper Branch of WPB on March 6 at Washington, D. C.

David J. Winton

Mr. Winton, president of the Winton Lumber Company of Minneapolis, Minnesota, has been apointed to succeed Norbert A. McKenna, and he is not only a recognized authority on lumber problems, but is thoroughly conversant with the problems of the paper industry.

▶▶▶ A LEAVE OF ABSENCE has been granted Donald S. Leslie, first vice president and general manager of the Hammermill Paper Company of Erie, Pennsylvania, to act as consultant to the War Production Board in Washington. Mr. Leslie's government appointment became effective March 30, when he reported for work in Washington. He will serve without pay in the Pulp and Paper Branch as co-ordinator of information on the paper industry for officials of the War Production Board, his chief activities being concerned with establishing policies related to war and civilian uses of pulp and paper.

▶▶▶ A NEW APPOINTMENT is the naming of A. G. Wakeman, operating manager of the Fox River Paper Corporation, Appleton, Wisconsin, as consultant to the Pulp and Paper Branch of the WPB.

▶▶▶ THE OFFICE OF PRICE ADMINISTRATION has issued an order preventing the proposed increase in the price of standard newsprint, and freezing the present price of $50 for sixty days. An increase to $53 had been announced for the second quarter, but the OPA will investigate the situation before issuing further orders, to determine whether conditions in the United States and Canada justify any increase. The order also freezes present differentials for colors and extra packing, and also the present mark-ups by jobbers.

THE GOVERNMENT NEEDS MORE GOOD TECHNOLOGISTS

Because the drive begun a year ago by the Federal Civil Service Commission did not establish a sufficient number of technologists on the employment lists to meet today's wartime needs, the Commission has recently reissued the announcement of these opportunities with slightly modified requirements. Salaries for the positions range from $2,000 to $5,600 a year, and applications may be filed until further notice with the Commission's Washington office.

By technologists, the Commission means a person experienced in "the necessary production, engineering, and scientific research work essential for the successful operation of an industrial plant, where such plant operation is based upon a thorough and expert knowledge of a branch of an applied science," such as explosives, fuels, plastics, rubber, minerals, or textiles.

A written test is no longer necessary for the junior positions ($2,000 a year), and, as before, no written test will be given for the higher positions. The maximum age limit for all the grades has been raised to 60 years.

Copies of the announcement (No. 188), and the forms for applying may be obtained at first- and second-class post offices or from the Civil Service Commission, Washington, D. C.

▶▶▶ AN ORDER IS MOMENTARILY EXPECTED increasing the price of pulp about $4 per ton. Such an increase, varying somewhat with the different grades, has been agreed upon by consumers and producers, and will doubtless be made official by a price ceiling order raising the present ceiling to the agreed figures.

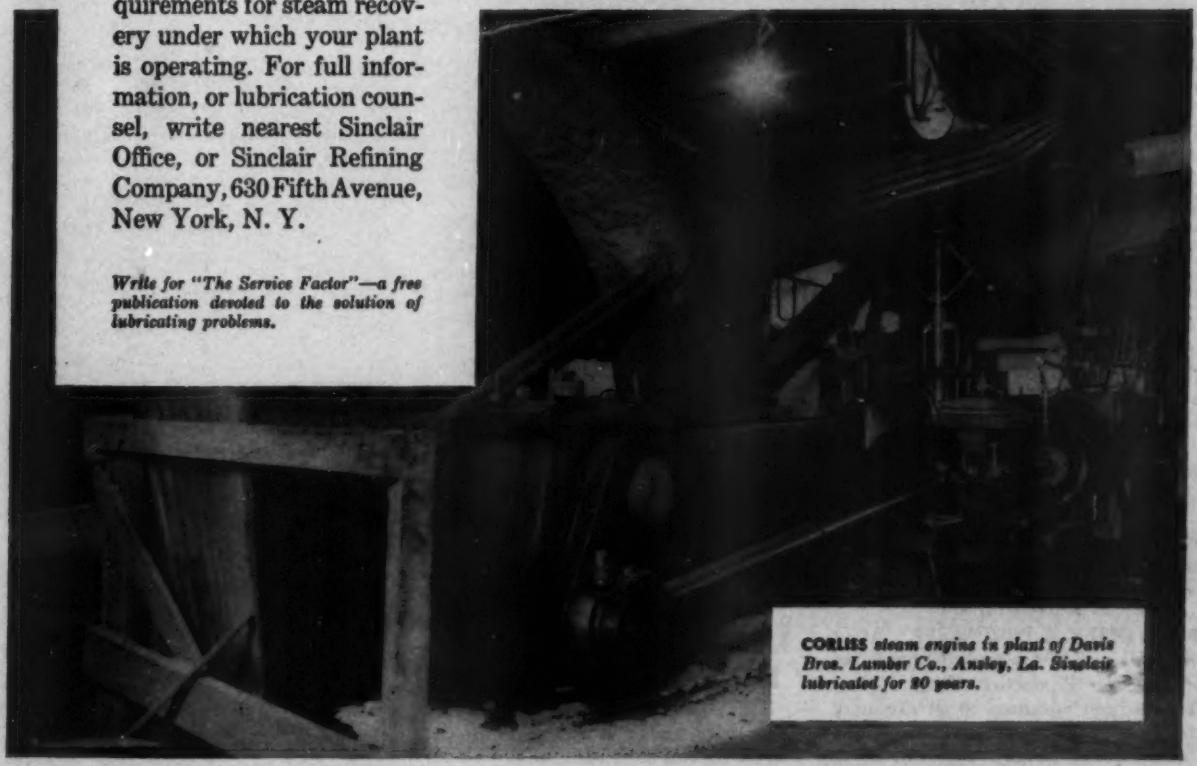
MACHINE SHOP BOARD FORMED TO AID INDUSTRY

Last fall the American Paper and Pulp Association instituted a survey to determine the nature and availability of the industry's machine shop facilities with the thought of making the idle time in these shops available for war production. A specially appointed committee of the paper industry is now organizing a Machine Shop Board to work out this plan. Up to the present, 111 companies, including 10 companies manufacturing converted paper products, have indicated that they have idle machine shop facilities that might be

WAR SCHEDULES suffer if power house lubrication is inadequate. For *STEAM ENGINES* there are . . .

. . . SINCLAIR STEAM CYLINDER and VALVE OILS giving efficient lubrication under normal top loads and today's emergency overloads. These lubricants meet any combination of pressures, temperatures, moisture conditions and requirements for steam recovery under which your plant is operating. For full information, or lubrication counsel, write nearest Sinclair Office, or Sinclair Refining Company, 630 Fifth Avenue, New York, N. Y.

Write for "The Service Factor"—a free publication devoted to the solution of lubricating problems.



CORLISS *steam engine in plant of Davis Bros. Lumber Co., Ansley, La. Sinclair lubricated for 20 years.*

SINCLAIR INDUSTRIAL OILS

SINCLAIR REFINING COMPANY (Inc.)

2540 West Cermak Road, Chicago · 10 West 51st Street, New York City · Rialto Bldg., Kansas City · 573 West Peachtree Street, Atlanta · Fair Building, Ft. Worth

This 24-sheet poster is being offered to mills and waste paper dealers throughout the country who wish to tie in locally with the National Waste Paper Conservation Campaign. The poster is designed so that the name and address or name and telephone number of a mill or waste paper dealer can be imprinted at the bottom of the poster. The paper and imprint are being supplied free by the Waste Paper Consuming Industries of America. Mills and waste paper dealers are being asked to support the campaign by paying for the poster space.

available. In addition, several companies have indicated that they have accepted contracts for war production without waiting for a central organization to be set up.

During the annual convention of the A.P.P.A., the Pulp and Paper Branch of the WPB proposed that a new association be organized to obtain the desired full utilization of machine shop facilties. At that time the industry representatives strongly urged that any such project be handled by the industry itself, and the Machine Shop Board procedure is in accordance with their position.

▶▶▶ A MACHINE TOOLS INDUSTRY Advisory Committee has just been formed according to an announcement by the Bureau of Industry Advisory Committees. George Brainard, chief of the Tools Branch, is Government presiding officer.

▶▶▶ EXECUTIVE ENGINEER of the Allis-Chalmers Manufacturing Company, Milwaukee, Wisconsin, C.E. Frudden has been made consultant to the Farm Machinery Bureau of the WPB.

▶▶▶ ONLY A FEW WEEKS AGO Ben Alexander was made a consultant in the War Production Board. Now he has been advanced to an executive position through the flare-up which followed the charges of an official in the Textile Branch that dollar-a-year men were using their positions to the advantage of their own industries.

▶▶▶ POSITIONS OF CONSULTANT to the Paper Branch of the WPB have been given to Howard E. Whittaker, director of the Brunswick Paper and Pulp Companys. A. G. Wakeman, operating manager of the Fox River Paper Company. Phillips Dennett of the Bird Machine Company has been appointed chief of the Pulp and Paper Machine Section of the Special Industrial Machinery Branch.

▶▶▶ THERE IS NO PROBABILITY that there will be any further restriction of the use of chlorine before May 1, but the shortage of copper, tin, Monel, aluminum and rubber is so acute that there may be further restrictions upon their use at any moment.

▶▶▶ TO REDUCE CONSUMPTION of paperboard, manufacturers have been requested to revise specifications for certain folding and set-up boxes. Many manufacturers are already operating under these specifications, and it is proposed to make them universal.

▶▶▶ SPECIAL ASSISTANT to Philip D. Reed is the new title of Ben Alexander of Wausau, Wisconsin, president of the Masonite Corporation. Mr. Reed is chief of the Bureau of Industry Operations in WPB.

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LOGGING ACTIVITY INCREASE REPORTED

Officials of the forest service say that more timber is being cut in the forest regions of Wisconsin and Upper Michigan this year than at any time since 1929, and in some areas loggers report activity approaching that of the early 1900's. Timber is being cut wherever it is available, including the national forest areas where logging is being carried on at the federally allowable limit.

Most of the current activity is, however, on privately owned lands, and wood for pulp provides the major part of the 1942 crop. Both in northern Wisconsin and Upper Michigan more logging trucks are rolling along the highways than ever before, and some Michigan railroads have been running special logging trains.

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▶▶▶ LAST MONTH H. V. Butterfield, production engineer of the Department of Munitions and Supply at Ottawa, inspected the long-idle plant buildings of the Abitibi Power & Paper Company at Sturgeon Falls, Ontario. Mr. Butterfield refused to say whether there were any government plans for the plant, adding that he would make a report to the Department.

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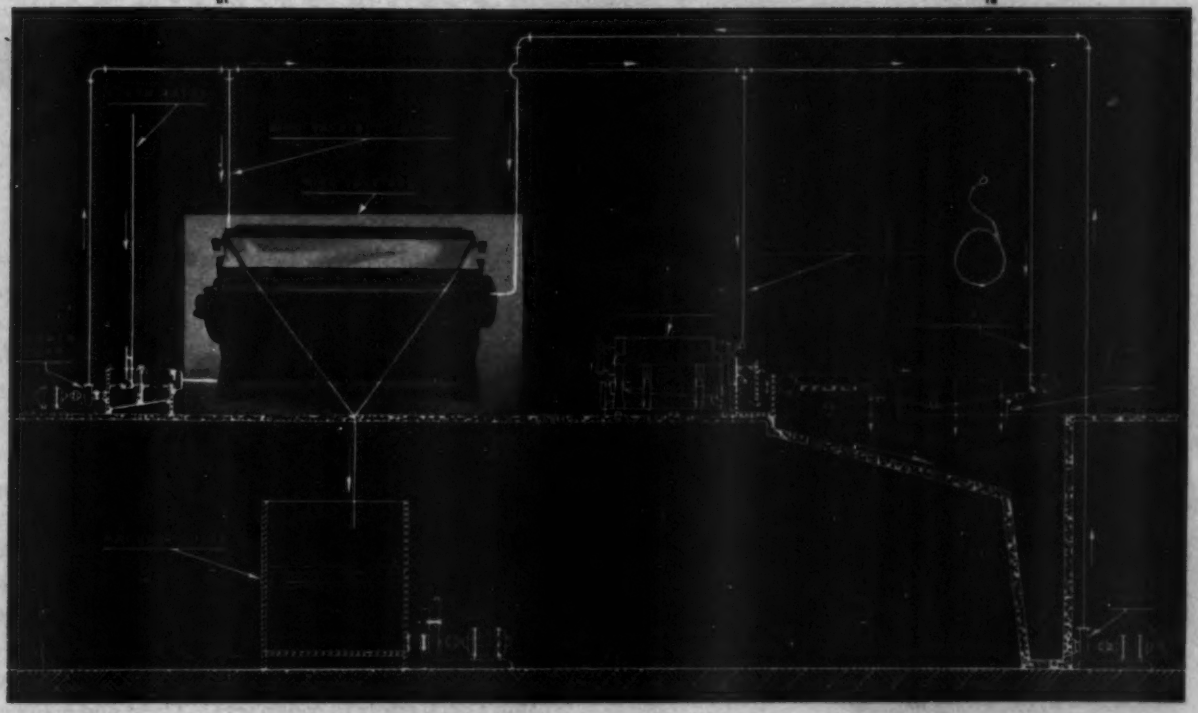
NEWSPAPERS IN BRITAIN CUT 10%— PRICES MAY RISE

British newspapers underwent a further cut of 10 per cent on March 15. They have been operating with one-sixth of their pre-war supplies, and this cut was affected by printing fewer papers and reducing circulation. Most British newspapers have been publishing four standard pages or eight tabloid pages a day and letting circulation expand.

The major factor in the new cut is the reduced imports of paper from Canada, because shipping space is needed for war supplies, and London reports that a price adjustment is expected in the near future. Canadian paper is landed in London at £24 a ton, while domestic production, supplying 100,000 tons a year is priced at £28, 15s, making an average price of £26. An upward revision is planned.

DO YOUR PART TO CONSERVE GOOD PAPERMAKING STOCK



A simple, low cost Bird Save-All system takes care of every gallon of white water—automatically assures you that every pound of precious stock goes right into good paper—at a cost per pound of stock that is too big a bargain to pass up, even if stock conservation were not a patriotic obligation.

Let us work out the figures on how much stock you can save and at what net cost.

BIRD MACHINE COMPANY
SOUTH WALPOLE · MASSACHUSETTS

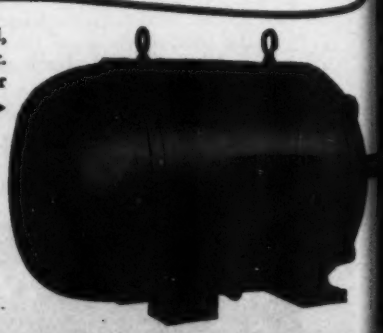
These Words

MAKE MOTOR-DRIVE *More than* POWER

Reliance men skilled in Application Engineering start daily on new missions essential to making our great war machine produce more than we ever dreamed was possible. They are answering calls where *motor-drive must be more than power.* These are typical . . . A new tinning process to make our reduced tin supply go three times as far . . . A drive to simplify machine design and insure a top-notch production pace on a hurry-up lot of hundreds of boring mills for producing tank turrets . . . Motors to speed up production of shell-turning lathes . . . A motor-drive for an automatic towing machine that will aid sea-going tugs to handle tows with less strain and reduce chances of losing the tow . . . A hoisting motor for bringing seaplanes to a warship's deck safely in rough seas...These and many more like them are engineering jobs done in cooperation with men who *start* their design with the question, *"What can we get the motor to do besides supply power?"* Such as:

Fully-enclosed, Fan-cooled D-c. Reliance Motor

Fully-enclosed, Fan-cooled A-c. Reliance Motor



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RELIANCE A-C D-C MOTORS

DEXTER COMPANY PROPERTIES SOLD TO CANADIAN SYNDICATE

▸▸▸ FINAL NEGIOTATIONS have been completed for the sale of the Dexter Sulphite Pulp and Paper Company, Dexter, New York, to a syndicate headed by Kenneth C. Irving of St. John, New Brunswick. Judge Edward A. Conger, United States District Court, issued the order discharging the equity receivership under which the company had been operating at his chambers in New York on March 28. Mr. Irving and associates will take over title and operations as soon as Judge Conger's order is entered with the clerk of the United States District Court in Utica, New York. All other details pertinent to the sale have been previously adjusted.

The sale price of the Dexter properties is estimated at approximately $1,000,000. This includes the purchase of all but eighteen shares of the total of 2,250 shares of capital stock, the purchase and discharge of debenture notes held by Watertown, (New York) banks and the assumption of all other obligations including a Reconstruction Finance Corporation first mortgage in the amount of $349,500. Satisfactory arrangements have been made for the continuance of this mortgage. Mrs. H. A. Long, widow of the former secretary of the Dexter Corporation, held over fifty per cent of the stock, while a majority of the balance was held by Mrs. James E. and Mrs. Clarence W. Campbell.

Present plans call for the continued operation of the mills with the same personnel and methods as those in practice during the past three years under the equity receivership. At present about four hundred men are employed producing eighty tons of high grade Mitscherlich sulphite pulp and sixty tons of wrapping paper of all kinds, including greaseproof and waxed, every twenty-four hours. G. H. Schell is general superintendent and Charles Hayes is superintendent of the sulphite division.

The Dexter sulphite mill is one of the oldest mills in the country today using the Mitscherlich process exclusively. Originally a woolen mill turning out blankets during the Civil War, it was purchased by Dr. Charles E. Campbell of New York City in 1888.

Dexter pulp mill located on the Black River.

Dr. Campbell established the sulphite business at that time with J. A. Outterson as superintendent.

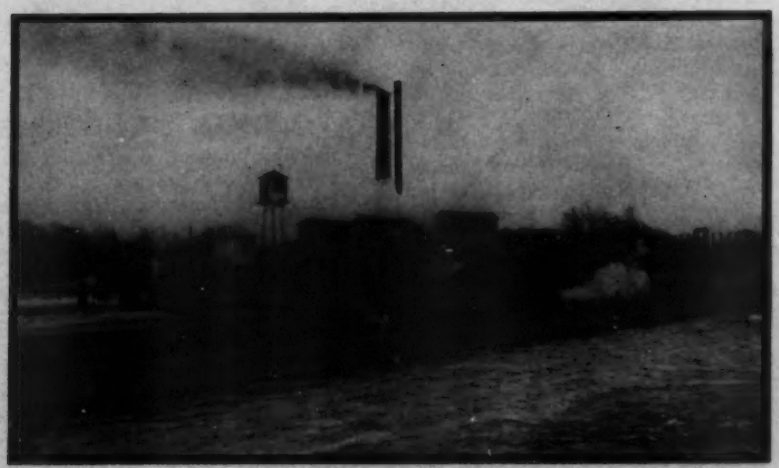
In 1900, Dr. Campbell turned over control of the mill to his two sons, Dr. James E. and Dr. Clarence W. Campbell. The sons operated the mill quite profitably until the depression in 1929. In the interim they absorbed the Frontenac Paper Mill which became an integral part of the organization. It is in the original Frontenac mill that the wrapping paper division is still maintained.

In 1917, William Randolph Hearst contracted to buy the Dexter Sulphite Pulp and Paper Company for a purchase price of three million dollars. The Messrs. Campbell operated the mills for Mr. Hearst for three years producing newsprint. There was considerable litigation concerning this transaction and the Campbells eventually resumed operation.

After the death of the Campbell brothers in the early 1930's, the mills were operated by the stockholders under a voting trust agreement. Operation under this setup was not profitable. Faced with financial disaster, the mills were closed late in 1938 and it was planned to dispose of the equipment. Early in 1939, A. Raymond Cornwall, Watertown attorney, stepped in and reorganized the business under an equity receivership.

Under the control of Brayton C. Foster, Dexter, New York, and Winfield E. McIntyre, Fayetteville, New York, equity receivers, the mills have prospered. A new boiler plant was constructed and other extensive repairs and improvements have been made. Fixed assets have increased $95,000 and quick assets $91,000 in the three-year period under the receivership.

Since the outbreak of the war, some difficulties have been encountered in maintaining adequate supplies of pulpwood. With the sale of the properties this difficulty is obviated, since Mr. Irving and his associates own vast stands of timberland in Canada. Their newly acquired Dexter holdings consist of the original sulphite mill, the Frontenac paper mill and a powerhouse where waterpower from the Black River is transformed into electrical energy for use in both mills. All properties are located on the banks of the Black River.



The Dexter company's Frontenac paper mill.

FINANCIAL

Wall street securities have never been so inactive as in recent months. Those owning securities are loathe to dispose of their holdings at prices usually far below those at which they were purchased, while the speculative element is almost entirely out of the market. The result has been a slight change in the price range during the past month, though the indications of growing strength in the South Pacific with General MacArthur in command has had a strengthening effect on prices.

American Boxboard Company—Net profit for 1941 was $436,410 as compared with $243,829 in 1940.

American Writing Paper Corporation—Net income for 1941 was $353,494 as against $26,214 in 1940.

A. P. W. Paper Company—Net profit for the half year ending January 10, 1942, was $76,734 as against a loss of $75,483 for the similar period in the preceding year.

Philip Carey Manufacturing Company—Net profit for 1941 was $1,364,848 as compared with $424,038 in 1940.

Celotex Corporation—Net profit for three months ending January 31, 1942, was $278,291 as against $156,865 for the same period in the previous year.

Champion Paper and Fibre Company—Net profit for forty weeks ending February 1, was $2,291,746 as against $1,829,634 for the same period in the preceding year.

Chillicothe Paper Company—Net earnings for the current fiscal year were $147,248, or slightly under the profit for 1939. The reduction was due to income and excess profit taxes which totalled more than the net earnings.

Container Corporation—Net income for 1941 was $2,427,177 as against $2,227,682 in 1940.

Crown Zellerbach Corporation—Net income for the nine months ending December 31, 1941, $7,332,212 as against $6,448,554 for the same period in the previous year.

Eastern Corporation—Net profit for 1941 was $835,043 as against $195,453 in 1940.

Eaton Paper Company—Net profit for 1941 was $101,686 as compared with $47,107 for the preceding year.

Robert Gair Company—Net income for 1941 was $1,127,140.

P. H. Glatfelter Company—Net income for 1941 after all charges, including Federal, State, and municipal taxes was $271,820 as against $276,088 in 1940.

Great Northern Paper Company—Net profit in 1941 was $1,382,888 as against $2,865,667 in 1940.

Hawley Pulp & Paper Company—Net profit for 1941 was $443,749 as against $436,406 in 1940.

Hummel-Ross Fibre Corporation—Net earnings for the fiscal year ending December 27, 1941, were $604,145 as against $566,628 for 1940.

Kalamazoo Vegetable Parchment Company—Net income in 1941 was $833,995 as against $586,558 in 1940.

Kimberly Clark Corporation—Net profit for 1941 was $2,904,170, equivalent to $4.72 per common share.

Masonite Corporation—Net profit for twenty-eight weeks ending March 14, 1942, was $786,967 as against $645,493 for the same period in the preceding year.

Minnesota & Ontario Paper Company—Net earnings for 1940 were $3,378,354 as compared with $1,698,337 for 1940.

Nashua Gummed and Coated Paper Company—Net income for 1941 was $563,448 as compared with $368,030 in 1940.

National Container Corporation—Net profit for 1941 was $1,073,453 as against $795,671 in 1940.

Oswego Falls Corporation—Net profit for 1941 was $453,124 as against $313,417 in 1940.

Oxford Paper Company—Net earnings for 1941 were $1,056,841 as against $807,448 in 1940.

Rayonier, Inc.—Net profit for the quarter ending January 31, 1942 was $927,083 as against $892,844 for the same quarter in the previous year and $935,760 for the preceding quarter.

St. Helens Pulp and Paper Company—Net profit for 1941 was $481,651 as against $414,059 for the previous year.

St. Regis Paper Company—Net profit for 1941 was $3,228,080 as against $2,087,105 in 1940.

Scott Paper Company—Net profit for 1941 was $1,939,629 as against $1,896,052 in 1940.

Union Bag & Paper Corporation—Net earnings in 1941 were $2,168,313 as against $2,134,391 for the preceding year.

United Paperboard Company—Net profit for six months ending November 29, 1941, was $192,561 as against $24,875 for the same period in the previous year.

United States Envelope Company—Net income for 1941 was $882,130 as against $530,418 in 1940.

S. D. Warren Company—Net profit for 1941 was $778,091.

West Virginia Pulp & Paper Company—Net profit for the quarter ending January 31, 1942 was $1,137,939 as against $957,301 for the same quarter the previous year.

New York Stock Exchange—Stocks

	Closing Prices March 25, 1942	Feb. 25, 1942
A. P. W. Paper Co.	*1⅛–1½	*1¼–1⅜
Celotex	7⅛	7¼
Same Preferred	*68½–74	66
Certain-Teed	*1⅞–2	*2–2¼
Same Preferred	28	28
Champion P. & F. Co.	15½	17
Same Preferred	97	99¾
Container Corp.	13¼	*12¼–12½
Cont. Diamond	7½	8
Crown Zellerbach	10¾	10¾
Same Preferred	79½	79½–80⅜
Dixie Vortex	*8¼–8¼	*8¼–8⅞
Same "A"	*33½–34⅜	*33–35
Robert Gair	1⅞	2
Same Preferred	10	*9¾–10¾
Gaylord Container	*9–9¾	*10⅛–10¼
Same Preferred	*51–52	*50¾–52½
International Paper	13	14
Same Preferred	55½	58
Kimberly-Clark	*27½–27⅞	*27¾–28
MacAndrews & Forbes	*18–19	*20–21
Masonite	25½	*26½–27
Mead Corp.	6⅞	*6–6½
Same Preferred	77	*72½–79
Paraffine Co.	*22–23¾	25
Same Preferred	*90–95	*90–98
Rayonier	9½	9½
Same Preferred	*24¾–25¼	25
Scott Paper	*30¼–31	31–32½
Same 4½% Pfd.	114	114⅛
Same 4% Pfd.	107⅜	*108–110½
Sutherland Paper	*18⅜–19	*18½–19½
Union Bag & Paper	8¼	8¾
U. S. Gypsum	45⅛	45¼
Same Preferred	168¾	*169½–177½

New York Stock Exchange—Bonds

Abitibi 5%	62⅜	------
Celotex 4½%	95½	------
Certain-Teed 5½%	86¼	84¼
Champion P. & F. Co.	------	102¼
Inter. Paper 5%	------	------
Inter. Paper 6%	105	------

New York Curb Exchange—Stocks

Am. Boxboard	------	------
Great Northern	30	------
Hummel-Ross	------	------
Nat. Container	8¾	------
St. Regis	2	2⅛
Taggart	3	3¼
United Wall Paper	------	1⅛

*Closing Bid and Asked Prices.

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CAN. WEST COAST MILLS EXPERIENCE LABOR PROBLEMS

A major problem now facing Canadian West Coast producers is the replacement of Japanese labor. Pacific Mills, Ltd., and British Columbia Pulp and Paper Company are most affected.

Previously 800 Japanese were employed among the mills, but they have now been sent to concentration camps or removed to interior points. To find suitable labor among white men available is proving difficult. New living quarters for the white men are being built by Pacific Mills at a cost of approximately $400,000.

E. I. DU PONT DE NEMOURS & CO. (INC.), DU PONT DYESTUFFS ORGANIC CHEMICALS DEPT., DYESTUFFS DIVISION, WILMINGTON, DELAWARE

OPA NEWSPRINT CEILING VOIDS CAN. INCREASE

Canadian newsprint producers will be considerably affected by the order issued near the end of March by the U. S. Office of Price Administration, which imposes a temporary 60-day price ceiling on newsprint at the prevailing level of $50 a ton. The ceiling in effect cancels out the increase to $53 a ton recently announced by most Canadian producers (who supply a large proportion of the United States consumption) because the order forbids American buyers to pay more than the prescribed maximum, as well as fixes the price at which American manufacturers may sell.

The OPA and the Canadian Government have been attempting for several weeks to reach a joint price ceiling. This would be the first United States-Canadian combined price action. The temporary price ceiling does not mean failure of this effort, because negotiations are continuing on the basis of cost studies under way in both countries. The new ceiling came into effect on April 1, and on or before its May 30 expiration date, it is expected a permanent price regulation will be issued.

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▸▸▸ A LARGE PART OF the 11th floor of the Murray Hill Building, 285 Madison Avenue, New York City, has been leased by the United Paper Board Company, Inc. Plans have been made to move the executive offices from 171 Madison Avenue some time in April. This is the first time these offices have been moved in 28 years.

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WEYERHAEUSER HOPES TO BUILD SULPHATE MILL

At a hearing before the committee on rivers and harbors of the House of Representatives, a letter from Weyerhaeuser Timber Company to the Board of Engineers was quoted by Representative Martin F. Smith.

Press reports have quoted from that letter as follows:

"A further important consideration in our plans for the future is the construction of a new sulphate pulp plant. We have before the priority division of the Office of Production Management (since superseded by the War Production Board) plans and requirements for this plant with an annual production of 70,000 tons of sulphate pulp from wood waste. This grade of sulphate pulp will be suitable for pulp for nitrocellulose powder, paper and board manufacture, and cordite for the British Navy.

"Tied in with the project, also, is a proposed waste liquor recovery system for the present sulphite mill, which, among other things, will effect an economic saving of important resource materials such as sulphur and limestone, besides eliminating organic waste materials from being discharged into the Columbia River."

If the company succeeds in its plan to build a sulphate pulp mill, it will be able to utilize its Douglas fir waste, which cannot be used in its present sulphite mill.

◆

AGREE TO WAIVE 40-HR. WEEK IN NO. NEW YORK

A resolution waiving provisions of the forty hour weekly work ceiling was adopted unanimously in the interest of wartime production by the delegates of the Northern New York Council of pulp, sulphite, and paper mill workers at their meeting on March 15. The resolution provides that the workers agree to maintain any schedule set by employers provided time and a half is paid above forty hours.

Employees of virtually all mills of northern New York's great paper-making industry are represented in the council. Nearly one hundred employees and delegates attended this session.

◆

CASES QUESTIONING PAPER DUTIABILITY

A case at Jacksonville, involving the dutiability of jumbo rolls of newsprint which the Customs officials found to bulk materially over 4 points in thickness was partially tried and transferred to New York for further testimony, according to a report made by Warren B. Bullock, manager of the Import Committee of the American Paper Industry. A similar case involving the dutiability of paper in sheets was transferred to New York for trial. In both cases the paper was classified for duty at the printing paper rate of 1/5 cent per pound and 5 per cent, but was claimed to be duty free as standard newsprint.

A case at Jacksonville involving the dutiable value of printing paper was abandoned by the importer when called for trial. The issue was whether or not a commission to the selling agent could be deducted from the dutiable value of the paper.

Two cases on the docket of the United States Customs Court at Detroit involve importations of newsprint

In connection with its campaign to promote more perfect shipping, the Shippers Advisory Boards and the Association of American Railroads have adopted this four-color poster, suitable for bulletin board posting. These posters are available, gratis, to those who are interested in promoting the careful handling and shipping of paper. The same design may be had with different display type for (1) the shipper of freight, and (2) the receiver of freight. Requests may be addressed to this magazine, and the sponsors will accept and fill such orders as long as the supply lasts. (Illustration courtesy Fibre Containers.)

weighing from 35.1 to 38.2 pounds, and bulking from 4.3 to 4.7 points in thickness. The paper is claimed to be duty free as standard newsprint but was classified for duty as printing paper.

Paper found by the Customs bureau chemists to have more than 6½ per cent ash, shipped from Canada for rotogravure use, is before the United States Customs Court at Los Angeles on the claim of the importer that such paper is duty free as standard newsprint, and not dutiable as printing paper as classified by the officials.

◆

BROMPTON NOW OWNER OF LAKE SULPHITE MILL

Honorable Norman Hipel, Ontario minister of lands and forests, has announced that the purchase of assets of Lake Sulphite Pulp Company by Brompton Pulp and Paper Company "has now been brought to a successful conclusion." Mr. Hipel said his department had made an agreement with the Brompton Company granting it a pulpwood concession "on practically all" the timber areas originally held by Lake Sulphite and Nipigon Corporation, Ltd.

The Brompton Company has undertaken to expend in the neighborhood of $2,500,000 on the completion of, and additions to, the existing buildings in the vicinity of Red Rock. The mill will have an initial capacity of 200 tons of pulp a day. It is understood that as soon as conditions permit, Brompton intends to increase the capacity of the mill to approximately double the amount. According to the agreement, 500 men will be employed in the initial stages of the development, with this number to be increased to more than 1,000.

◆

CANADIAN PRICE BOARD APPOINTS ADVISORY COMM.

Appointment of an advisory committee on economics and simplification in production and distribution of newsprint has been announced by the Wartime Prices and Trade Board of Canada. The committee has been nominated by the trade itself, and appointment has been confirmed by the chairman of the Board.

Members of the committee are: E. M. Little, general manager, Anglo-Canadian Pulp & Paper Mills; Col. C. H. L. Jones, president, Price Brothers & Company; R. C. Doanem, vice president, International Paper Sales Company; G. T. Clarkson, re-

PRE-FITTED to Your Installation!

Here's the "fittin room" for GEN SPRING Hangers . . a machine that dupli cates actual-servic conditions!

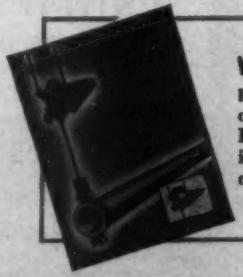
GENSPRING
CONSTANT-SUPPORT HANGERS...
are individually calibrated for each job!

There's no chance of misfits in the hangers for your power piping . . . no delays for "fussy" calibrations, . . . when you specify GENSPRING Constant-Support Hangers!

Every GENSPRING unit is *pre-fitted* before shipment . . . tested and calibrated under load-and-travel conditions that duplicate actual-service specifications. Yet, field changes up to ±16% of rated hanger load may be made after installation with the simple adjustment built into each hanger.

These are only two of the advantages of "floating" pipe-suspension by GENSPRING Hangers. Through unique engineering design, these hangers provide constant support for piping in every "hot" and "cold" position. The weight of pipe is always balanced . . . transfer of vertical vibration to the pipe is eliminated . . . the safety factor of the complete system is effectively maintained. And *all* in minimum headroom!

Get full details of GENSPRING Constant-Support Hangers for loads from 250 to 8500 pounds. Costs are moderate due to mass production and interchangeable parts. Grinnell Co., Inc., Executive Offices, Providence, Rhode Island. Branch offices in principal cities of United States and Canada.



WRITE FOR complete Data Book on GENSPRING Hangers containing piping-travel calculations.

GENSPRING CONSTANT-SUPPORT HANGERS BY
GRINNELL
WHENEVER PIPING IS INVOLVED

ceiver and manager, Abitibi Power & Paper Company; L. J. Belnap, president, Consolidated Paper Corporation; C. G. Sage, vice president, Spruce Falls Power & Paper Company; A. F. White, chairman of the board, St. Lawrence Corporation, Ltd.; H. S. Foley, president, Powell River Company; R. P. Kernan, president, Donnaconna Paper Company.

◆

ACUTE NEWSPRINT SHORTAGE BEING FELT IN AUSTRALIA

Despatches from Sydney state that Australia is facing a serious paper shortage. Newspapers, which depend chiefly on Canada for their supply of newsprint, already have been reduced in size, and face further reductions.

Kraft and other types of paper for wrapping has become so scarce that customers must now carry home all but perishable goods without wrapping.

◆

PACIFIC MILLS INCREASE THEIR PULPWOOD AREA

The Pacific Mills, Ltd., Canadian subsidiary of Crown Zellerbach Corporation, with mills at Ocean Falls and Vancouver, have augmented their pulpwood holdings with the purchase of about 10 square miles of standing timber on Vancouver Islands.

An initial payment of $400,000 has been made, with the total purchase price said to be in the neighborhood of a million dollars.

Most of the timber is hemlock and will fit well into the requirements of Pacific Mills, now engaged in a varied production program of newsprint, kraft, and sulphite pulp for which there is now an almost inexhaustible market.

◆

WOOD & ENGLISH NOW BEAVER COVE TIMBER COMPANY

Sequel to the multi-million dollar deal for Vancouver Island timber which closed a few months ago, Wood & English, Ltd., pioneer logging organization, has changed its name to Beaver Cove Timber Company, and moved its offices to the 15th floor of the Standard Bank Building, Vancouver, British Columbia. The Beaver Cove Timber Company now ranks as a subsidiary of the company created when Puget Sound Pulp and Timber Company of Bellingham negotiated the purchase of Canadian Forest Products, Ltd., Wood & English, and other timber in the Nimpkish River Valley of Vancouver Island.

Preliminary operations are now under way to extend road and railway into the timber and to rehabilitate equipment for production. Several hundred men are now on the ground, but logs will not be taken out for several months. When in full operation, the combined companies will represent one of the biggest log-producing organizations in the Canadian Pacific Northwest.

◆

EGAN NOW REPR. FOR SOUNDVIEW & PUGET SOUND COS.

Severing a twenty-year service with Bulkley, Dunton & Company, Roger Egan left that organization on March 15 to become eastern representative of Soundview Pulp Company and the Puget Sound Pulp & Timber Company.

Mr. Egan's office is located at 60 East 42nd Street, New York City.

◆

GIFT PARCELS

▶▶▶ A MOST UNUSUAL PLAN reaching a high point in employer-employee good will is being marked by a large number of American companies that have employees serving in the Armed Forces. The plan is sponsored by "Parcels for the Forces, Inc.," with headquarters in New York's Radio City. This service group studies the extra needs of service men, obtains the correct items, assembles them into compact gift parcels which may be dispatched anywhere.

This gift plan forms an excellent medium to keep companies in touch with their former employees and does away with any feeling the boys may have that they are completely cut off from home ties. Arrangements may be made so that these gift parcels may be sent at regular intervals which gives the boys an added joy of expectancy.

A typical gift package includes the following:

One pound tin of cookies
One tin of chocolate wafers
One pound of fruit bon bons
Package of California figs
One tin of deviled ham
Two decks of playing cards
Toothbrush and toothpaste
Brushless shaving cream
Razor blades
Steel shaving mirror
Talcum powder
Pomade
Shoe polish
Chewing gum

This gift service takes on the spirit of Christmas and follows the American soldier boys wherever they go.

◆

▶▶▶ HIGH SCHOOL AND COLLEGE BOYS are expected to patrol the forests of British Columbia this summer and protect them against possible incendiary fires. According to Lands Minister A. Wells Gray, it may be necessary for them to quit school in mid-May to take necessary training courses. Mr. Gray said he had asked Ottawa for authority for a battalion of youths (between 800 and 1,000), and sufficient fire-fighting equipment to keep British Columbia's forests from destruction should bomb fires ever start in the tinder-dry forests.

◆

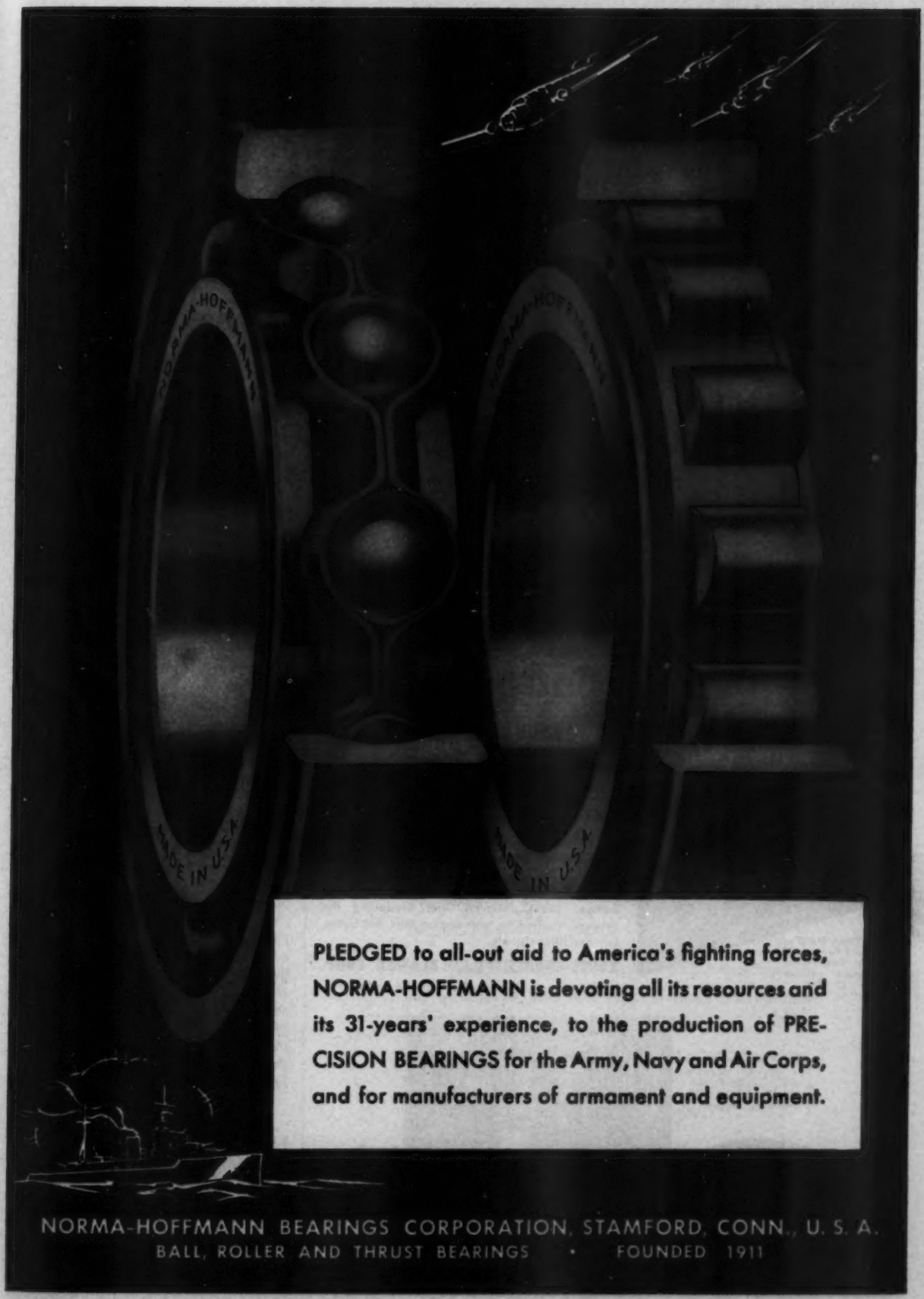
PAPER CONSERVAT'N TIPS—PROVINCIAL

In a recent issue of its house organ, the Provincial Paper Company gives some timely tips on the manner in which printers and advertisers can get more value out of less paper. The following suggestions were included:

a) Design booklets and folders to cut evenly from standard size sheets and to avoid waste through faulty printing. Use minimum size borders.

b) Make certain that the proper types of plates and engraving are used for the job to be done and that inks are adapted to the work. Get the assistance of the ink company experts rather than experiment in ways which may result in wasted jobs.

c) Make certain that the stock used in proving color plates is identical to that on which the job is to be run.



PLEDGED to all-out aid to America's fighting forces, NORMA-HOFFMANN is devoting all its resources and its 31-years' experience, to the production of PRECISION BEARINGS for the Army, Navy and Air Corps, and for manufacturers of armament and equipment.

NORMA-HOFFMANN BEARINGS CORPORATION, STAMFORD, CONN., U. S. A.
BALL, ROLLER AND THRUST BEARINGS • FOUNDED 1911

d) Leave paper in its package until a job is ready to go to press, and pile paper carefully to avoid over-hanging edges. Keep stock piles of paper covered, and don't let salesmen waste sample sheets.

e) Keep printing and bindery equipment clean, and use waste stocks to make certain all oil and dust is thoroughly removed.

In view of the war effort and the Government's request for paper conservation, Provincial feels that the above suggestions are timely and helpful to the cause.

◆

HEARTY RESPONSE TO WASTEPAPER SALVAGE IN CAN.

Since the beginning of the "Salvage Paper" campaign in Canada, the Dominion's people have contributed 10,000,000 pounds of wastepaper to the country's war effort.

It is said that one ton of wastepaper will produce sufficient material for the manufacture of any of the following: 1,500 shell containers; 9,000 shell fuse component parts; 47,000 boxes for small arms ammunition; 3,000 boxes for aero cannon shells; 1,000 packing cases for two-pounder shells.

TWO COMMITTEES SET UP TO ADVISE CAN. WARTIME BD.

The establishment of two special committees to guide and advise the Wartime Prices and Trade Board on problems of the Canadian pulp and paper industry and deal with matters beyond the scope of the Board's price administration of the industry was recently announced by Wilbert H. Howard, coordinator of pulp and paper products. Leading figures in the industry have agreed to serve on the committees, which will assist not only Mr. Howard, but also his deputy, C. N. Moisan of Montreal and the ten administrators of price control over as many different branches of the industry.

Composing a four-man general advisory committee are L. R. Weldon, president; F. G. Robinson, first vice president of the Canadian Pulp and Paper Association; and Charles Vining, president; and Paul Kellog, deputy president of the Newsprint Association of Canada.

A second committee set up to deal with studies of possible economics and simplification in the industry consists of: P. M. Fox, general manager, St. Lawrence Paper Mills Company, chairman; W. J. Water, general manager, Mersey Paper Company; E. W. McBride, Abitibi Power and Paper Company; R. Collins, Consolidated Paper Corporation; E. M. Little, general manager, Anglo-Canadian Pulp & Paper Mills, Ltd.; R. Bell Irving, vice president, Powell River Company; I. H. Copeland, Canadian International Paper Company; W. S. Kidd, general manager, E. B. Eddy Company; and J. Stanley Babbitt, manager, Montreal Division, Gair Company of Canada.

◆

ENGLAND'S WARTIME WOOD PULP SOURCES

The Canadian Pulp and Paper Association and the Newsprint Association of Canada have disclosed the following facts regarding the sources of England's supplies of pulp under wartime conditions.

Before the war, about 1,500,000 tons of wood pulp were imported a year from near-by Scandinavian countries. Immediately war was declared, the Ministry of Supply (Paper Control) of the British Government made effective a practical plan that had been developed in advance to control instantly the consumption of pulp and papers. This plan has reduced the use of wood pulp to but 24 per cent of pre-war consumption.

The North American continent now solely supplies England's wood pulp. About 35 per cent is obtained from the United States and 65 per cent from British Commonwealth countries; of this 65 per cent, Canada and Newfoundland supply all but a very small part. It is calculated that if the difference in relative productive capacity of wood pulp is taken into account, Canada and Newfoundland together are supplying about 4 tons to every 1 ton sought from the United States.

Practically every Canadian company holds British contracts, and in addition, Canada has been successful thus far in meeting all urgent needs arising from emergencies. Canada and Newfoundland also provide newsprint, carton boards, gummed kraft paper, and contribute substantially to the supply of building boards and kraft liner board.

◆

▶▶▶ RECENT SPRING RAINS in the State of Maine caused minor flood damage to several paper mills and associated industries. Power engineers report that the rains were sufficient to fill ponds, lakes, and other reservoirs to meet industrial power needs for the remainder of the season unless more unusually cold weather should follow.

Don't Get Caught With YOUR Pumps Down!

Vacuum Pump Installed in Southern Paper Mill. Capacity 1,000 CFM; 10" mercury vacuum; 580 RPM; 27 BHP.

Now, while you are straining every facility to increase production, you can really appreciate the dependability of your Roots-Connersville Vacuum Pumps.

But with uninterrupted production so vital, and deliveries of new equipment so uncertain, it doesn't pay to take chances. A schedule of maintenance, rigidly adhered to, will keep your pumps "sweat" running, and producing the vacuum required on your suction rolls, flat boxes, felt conditioners, etc.

ROOTS-CONNERSVILLE BLOWER CORP.

204 Monroe Avenue, Connersville, Indiana

Direct connected motor driven vacuum pump in kraft mill. Capacity 2,300 CFM; 8" mercury vacuum.

Roots CONNERSVILLE SINCE 1854

All Out for VICTORY

Improved Moderate Speed VACUUM PUMPS

If you need WATER-ABSORBENCY QUALITIES .... You Need-

SURFAX W. O.

Houghton's CONCENTRATED Surface Active Agent

● Its use increases greatly the water absorbency needed in certain types of paper. We call this "wetting-back" speed, for fibres treated with SURFAX W. O. will not only wet out faster, but will also have the property of more rapid water absorption in the finished product.

This chemical helps, too, in dispersing and spreading adhesives and coatings. It thins out solution viscosities. All in all, SURFAX W. O. can be an invaluable help to your manufacturing processes. May we discuss it with you? E. F. HOUGHTON & CO., Philadelphia, Chicago or Detroit.

Another Use!

Surfax W. O. may also be used for cleaning kerosene from felts, removing oil and odor.

NOTES ON CONSERVATION OF CRITICAL MATERIALS... No. 2

A key man in the battle of production is the storekeeper. In charge of the "arsenal of material," he zealously guards supplies of critical materials such as Monel, Nickel, Bronze, Copper and other corrosion resisting alloys used for pulp and paper-making equipment. Yet even greater care must be exercised when necessity demands exchange or substitution of these materials. Just as low octane gas in place of high can ruin a high compression aircraft motor, so, too, can the wrong combination of metals give trouble. For your assistance in making proper selections we offer the following as a guide:

As paper industry machinery engineers know, *where corrosion is a factor* it is poor practice to place in contact with each other two metals of greatly differing composition. It is true that different metals are used together in screens, fourdriniers, jordans, valves and pumps without causing trouble. These combinations are successful because they are made in accordance with engineering principles which take into account the factors influencing galvanic corrosion. Technical information on this subject will be forwarded on request. Among the rules to be observed in using substitute materials are those listed below. The International Nickel Company, Inc., 67 Wall St., New York, N. Y.

PERMISSIBLE METAL COMBINATIONS

DO...

1. Check carefully that substitute material has adequate corrosion resistance.

2. When using dissimilar metals together make certain they form a safe galvanic couple.

(*a*) Under most conditions combinations of Monel, Bronze, Brass, and Copper are safe.

(*b*) Usually small areas of Monel or Bronze may be combined with large areas of steel or cast iron, such as Monel bolts in steel machine rails or Monel pump shafts with iron or alloy iron impellers.

DON'T...

1. Never combine metals or alloys whose composition and relative corrosion resistance are not known to you.

2. Do not combine large areas of Monel, Bronze, Brass or Copper with small areas of steel, such as steel rivets in Monel screen plates, or steel nails in Monel sheet.

3. Do not weld corrosion resisting alloys with welding rods other than recommended for their use.

MONEL

"Monel" is a registered trade-mark of The International Nickel Company, Inc., which is applied to a nickel alloy containing approximately two-thirds nickel and one-third copper.

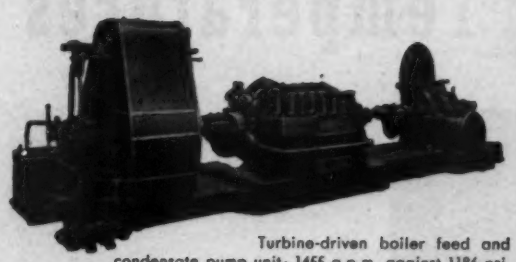
INCO NICKEL ALLOYS ARE YOUR ALLIES

MONEL • "K" MONEL • "S" MONEL • "R" MONEL • "KR" MONEL • INCONEL • NICKEL • "Z" NICKEL

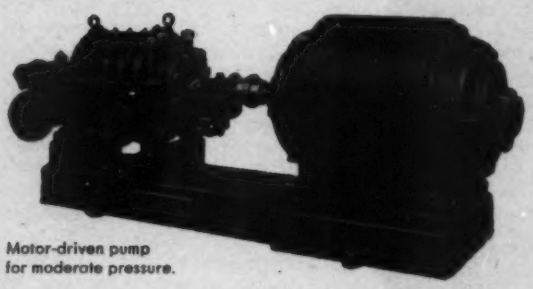
Sheet... Strip... Rod... Tubing... Wire... Castings

Whatever the capacity or pressure of your boilers or the temperature of the water

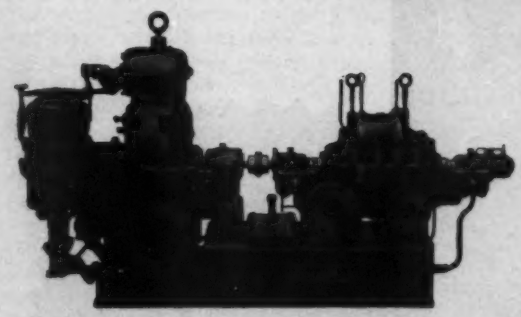
a DE LAVAL boiler feed pump is available



Turbine-driven boiler feed and condensate pump unit; 1455 g.p.m. against 1186 psi.

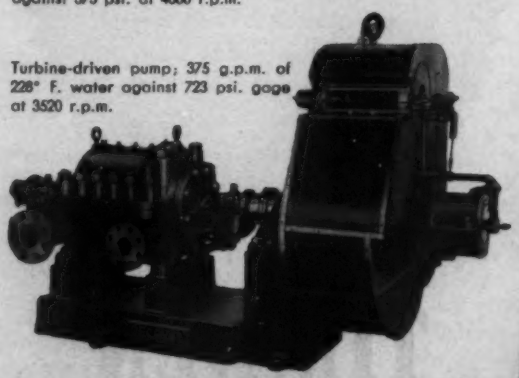


Motor-driven pump for moderate pressure.



Turbine-driven four-stage pump; 300 g.p.m. of 235° F. water against 575 psi. at 4000 r.p.m.

Turbine-driven pump; 375 g.p.m. of 228° F. water against 723 psi. gage at 3520 r.p.m.

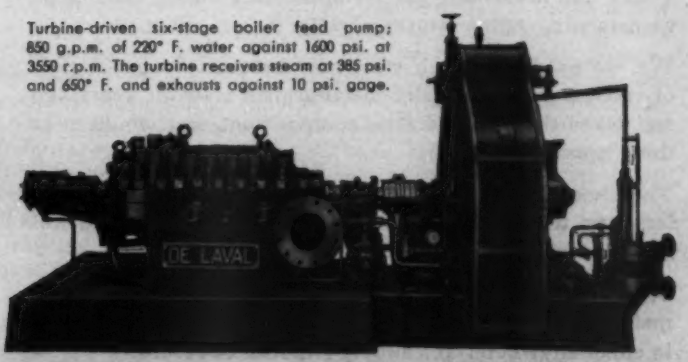


Distinguishing features which enable De Laval pumps to meet successfully the most severe conditions of present day boiler plants are:

1. **Labyrinth wearing rings,** which permit greatly increased clearances for a given amount of leakage,
2. **Hydraulic axial balancing system,** which maintains rotor accurately in position without dependence upon a thrust bearing,
3. **Improved high quality alloys,** which meet the special requirements of the several parts, and
4. **Limit gage manufacture** upon an interchangeable basis, supplemented by
5. **Complete test** at the designed capacity, pressure and temperature before the pump leaves our shops.

Ask for Catalog P-3623.

Turbine-driven six-stage boiler feed pump; 850 g.p.m. of 220° F. water against 1600 psi. at 3550 r.p.m. The turbine receives steam at 385 psi. and 650° F. and exhausts against 10 psi. gage.



DE LAVAL *Steam Turbine Co.*
TRENTON, N. J.

We're Elevating Temperatures

Today you are asking for seamless steel tubing capable of withstanding temperatures of 1500°F. and more.

We are producing such steel now because we put a staff of research engineers and metallurgists to work years ago and asked them to find steel compositions that would meet these specifications.

These men have elevated the service temperatures of seamless steel tubes 500°F. in the last few years and they're still hard at work improving these compositions.

We're not bragging when we say that we have for years maintained the most consistent high temperature program in effect anywhere. It's simply a matter of record.

You can draw from this wealth of experience to solve your own high temperature problems. Simply write or phone us today, without obligation.

THE TIMKEN ROLLER BEARING COMPANY, CANTON, OHIO
Steel and Tube Division

TIMKEN
TRADE-MARK REG. U. S. PAT. OFF.
SEAMLESS STEEL TUBES

Manufacturers of Timken Tapered Roller Bearings for automobiles, motor trucks, railroad cars and locomotives and all kinds of industrial machinery; Timken Alloy Steels and Carbon and Alloy Seamless Tubing; and Timken Rock Bits.

Editorial

Do It Now!

▶▶▶ THE BiG EVENT of outstanding importance to the paper industry during the past month was the issuance of the pulp allocation order M-93 by the War Production Board on March 12th.

To quote the remark of one of the industry's large pulp producer after he had digested the allocation order, "It is a sock dologer!"

Through the administration of this order, the Government controls the operations of the entire industry, because under its terms, every mill producing pulp must obtain an allocation order from the War Production Board before it can convert a pound of its pulp into products.

It is a drastic war order and far-reaching, the effect of which is to arouse the entire industry to the grim fact that every mill and every man in the industry must from now on adjust all its operations and all his activities to the war production program.

While the suddenness of the order had a stunning effect upon producing units, there is no reason why any should become panicky because the severity with which the provisions of the order will bear down upon any producing unit, will depend primarily upon the attitude of the producers to the war production program and the manner in which the order is administered.

After all, the producers must ask themselves two questions: "Why are we in the war?" and "What are we doing to help win the war?" We are in the war to save ourselves and our allied people from becoming serfs and slaves to the most brutal bunch of buccaneers in all world history.

In order to win the war, there is but one thing to do, and that is to surpass the axis powers in the production of armament and essential materials for the support, supply and maintenance of the fighters on the front, on the seas and in the air. Of what use is an army with too little and too late equipment?

Now, ever-increasing quantities of pulp and paper products are needed to service war materials and war armament and every mill in the industry must actively seek for every opportunity to best serve and co-operate with the all-out war program. It may develop that certain mills are making certain types of paper that are not required for war purposes and war services, but they, nevertheless, have buildings, equipment, capital, labor and facilities which could be adjusted and adapted to the production of some type of war armament or munitions bitterly needed. Their duty to their country and themselves becomes at once self evident.

Don't say it can't be done. Witness the complete turnover of the automobile industry from production of civilian goods to war armament production.

And what might appear at first to involve some sacrifices may in the end prove to be of great saving service to the war effort.

At any rate, there is now but one course left open to every mill and every man in the industry to adopt, and that is to find out how they can best serve their country without further delay.

If the way is not at present readily apparent, seek it out at once and determine where and how the best service can be given and give it. It has been tragically demonstrated so far that victory will be won only by aggressive action. A defense attitude is a waiting attitude and invites defeat.

America must not become a reluctant, hesitant dragon. It is for every mill to determine now, at once, whether it can render its best service to winning the war, by continuing in the paper industry setup or by adapting its facilities and resources to some other type of war production. Whichever it is, do it now.

All the paper and paper product producing equipment of the industry cannot be used for making the products they were set up to produce. Under the allocation order, the Government will direct the pulp to those producing units that can produce most efficiently and sufficiently. The balance of the industry equipment must be directed into war production lines. Our point is that every mill should at once determine its status and then voluntarily make its own adjustment and not wait to be directed so to do by the Government.

Our House of Tomorrow

▶▶▶ MEN AND NATIONS no longer trust their destiny to trial and error. Through education and experience man has learned to build according to specifications. The world has adopted scientific methods for practically every phase of its progress.

In a recent issue of *Foreign Commerce Weekly* the Hon. Wayne C. Taylor, Undersecretary of Commerce, wrote under this title, "Blueprint for Our Future." The first step in building a battleship, airplane, gun, plant, or a piece of machinery is to blueprint it. Then why not "blueprint" the future of our nation?

Industry is already envisioning this new world we shall live in "tomorrow when the world is free," and above the grim picture of the war and all it has demanded of us, already there are signs of a new day.

In these unusual times, many of our customs must be discontinued. But this is only an expediency for the aid of defense work. It does not mean the cessation of activity. This year the annual meeting of the Superintendents Association which is scheduled to be held at Grand Rapids, Michigan, in June, will be held without the usual exhibit of papermaking equipment that has always been such an attraction. Much work is going on behind the lines, but for the sake of economy and the aid of transportation the exhibition will have to be deferred. Many of the manufacturers of such equipment are geared to an all-time high production with defense work. Every day epochal ideas go into the bank of research that will build that House of Tomorrow. When all of these developments are released in concrete form, the industry will find a new world indeed.

For the duration, it is an accepted fact that a wide and co-ordinated research program will be conducted by the nation's industrial and business leaders, so that the "Blueprint for Our Future" will insure the nation that its House of Tomorrow will give to its people a new order that will far exceed the old.

Current Thought

LET'S GET RID OF OUR ILLUSIONS . . . . .

WILLIAM SIBLEY

▸▸▸ THE WIDESPREAD BELIEF among our world neighbors (whether it be our cousins in England or the Japanese) that we are a nation of money worshippers is not without justification. Having pioneered the richest continent in the world, under a system of government which permitted private enterprise, we became the richest people in the world. Being so rich we have unconsciously developed a superiority complex — and superior smugness isn't easily digested by anyone. Hence, the assignment of the stigma that Americans are money-grubbers.

Right now, and perhaps for some time to come, we are learning (the hard way) that money isn't everything. We are being taught, by bitter experience, that one can't stop a twenty-ton tank with a $10,000 bill. The stutter of a machine gun cannot be cured by waving a well-choked billfold. The sneaking submarine is little influenced by the amount of gold buried near Fort Knox. Right now we are being impressed with the fact that freedom is something one doesn't buy with money. Freedom is a state of being built with sweat and sustained by enterprise.

America's number one illusion is the belief that since we are the richest nation on earth, we cannot lose the war. True—this *is* the richest and potentially the strongest nation in the world. But sheer weight of gold doesn't win battles and realization of potentials sometimes comes too late.

America's number two illusion is the costly belief that we can win the war without using our best men in government, regardless of party. With all our costly mistakes in previous wars, we long since should have gotten over that idea. But no—we still have admirals and generals who persist in perpetuating the juvenile jealousies between the Navy and the Army; we still have cabinet members whose titles are misnomers, when considered literally; we yet put idealists or crass business men in high diplomatic places and expect them to compete with other diplomatic corps made up by men trained for their posts through a lifetime of schooling.

America's number three illusion is that we can fight best on a diet of optimistic news. Our present leaders seem to think it necessary to withhold the bad news and disseminate only the welcome information. If we, as a nation, are so weak that we must read and hear nothing save good news we deserve to lose the war. It was William L. Shirer, I believe, who made the startling statement in a recent broadcast that, terrible as it both seems and is, England, in comparison with the United States, has "the incomparable advantage of being bombed." Mr. Shirer was by no means expressing the hope that we would be bombed, but merely pointing out that it takes bad, and very bad news, to awaken a nation to full fighting force.

America's number four illusion is that we can win this war on a forty-hour week. Factory shifts in England are today working on 65 to 70 hours a week; German workers are on a 70 to 78 hour weekly schedule. More than this, Germany has a five-year head-start. And with that five-year head-start, with workmen putting in from 70 to 78 hours a week, there are yet thousands of factories throughout our country working 8 hours a day, five days a week. This type of production schedule will *lose* the war. Victory will be ours only when literally thousands of plants get into war material production—on a 168-hour weekly basis.

America's number five illusion is that we are far from the war theater and that we can still preserve the isolationism we originally sought in 1620. Until America wakes up to the realization that this is a war of ideas more than one of men and machines, we will be in mortal danger of being on the losing side. In 1938, Prime Minister Chamberlain expressed the thought that Czechoslovakia, 700 miles from England, was too far away and too small a country to be worth a war. A year later, the Frenchmen raised a hue and cry about Danzig—refusing to fight or die for that far-distant and foreign port. It is high time we in the United States fully realize that Narvik, Dakar, Dongdang, Seorabaya, Darwin, Chungking, Calcutta, Cairo, can mean fully as much to us and our way of life as Manila, Honolulu, Panama City, Charleston, Boston, or San Diego. If we do not believe in freedom under law for Asiatics or Scandinavians we do not believe in it for ourselves.

That last statement is true because, whether we like it or not, the globe has so shrunk since Revolutionary War days, the United States is irrevocably involved in the political, social and military welfare of every nation on earth. Very few in this country relish the idea of becoming the world leader, or the globe's policeman. We would so much rather live here in our own way. But isolation is now a thing to be found only in history books. We lost our treasured pearl of isolationism in Pearl Harbor. If we long continue to worship its memory we will lose this, and successive wars.

These few words are written on the day the author paid his 1941 income tax. While that income tax was a trifle over three times what it was the previous year it remains a small percentage of the total income. (Gratifying to *me*, but *not* to Victory.) Next year my single contribution (at the same income) will probably be more than doubled. But—so what? With a national income of approximately 100 billion dollars last year, the United States produced about 15 billion dollars worth of motor trucks, trainer planes and other war material essential but not decesive to Victory. Germany had an income of approximately 40 billions—out of which approximately 27 billions were spent for decisive war material such as tanks, planes, submarines, munitions, etc. The combined Axis-Country war material production last year approximated a total of 45 billion dollars—a little more than the combined production of England, Russia, and the United States.

All of which lends satisfaction that we *do* have the money with which to work, but which makes us realize that it is fatal to sit on our money bags under the false illusion that money is power. Let us keep firmly in mind that *one doesn't stop a 20-ton tank with a $10,000 banknote.*

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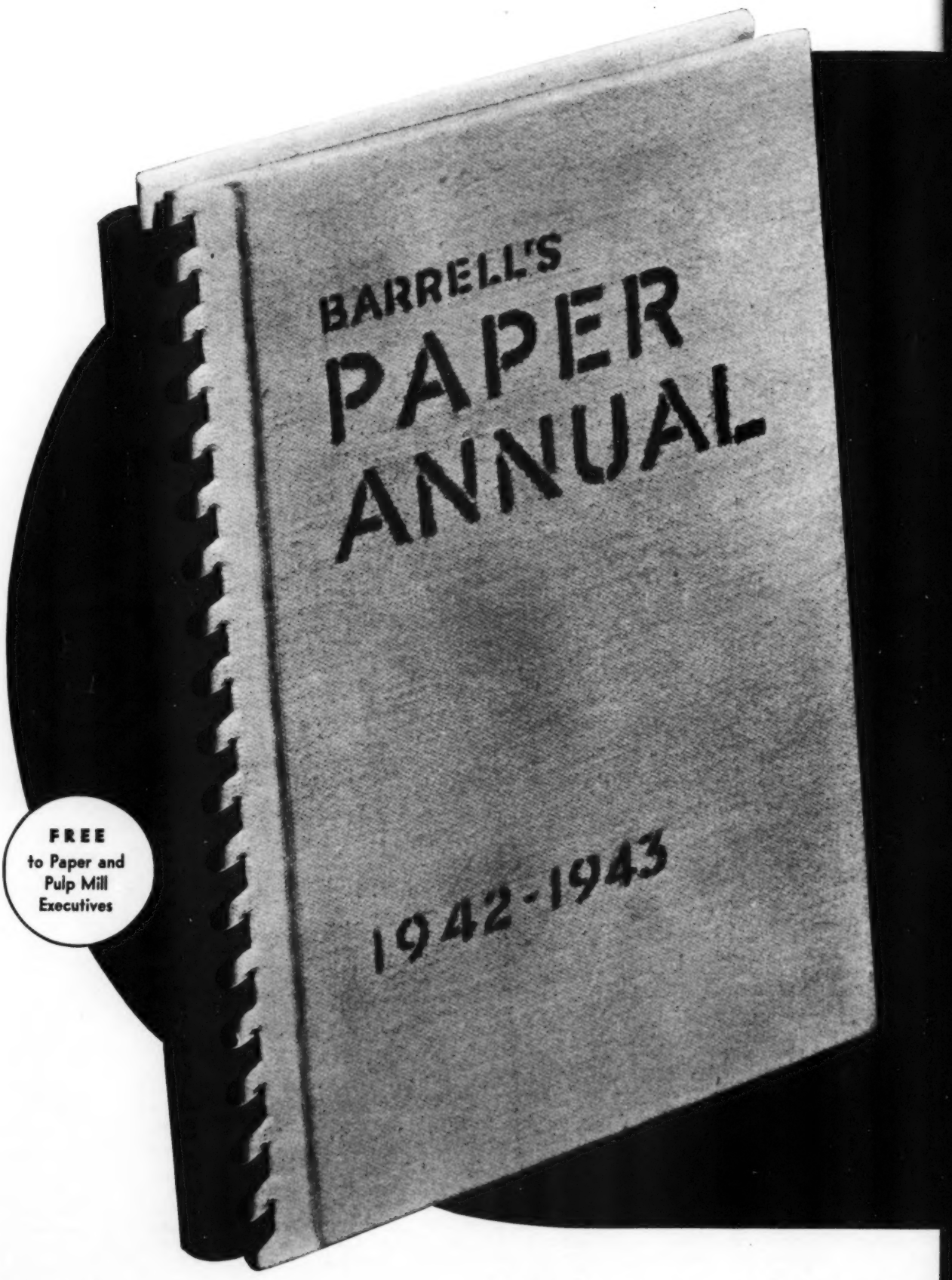
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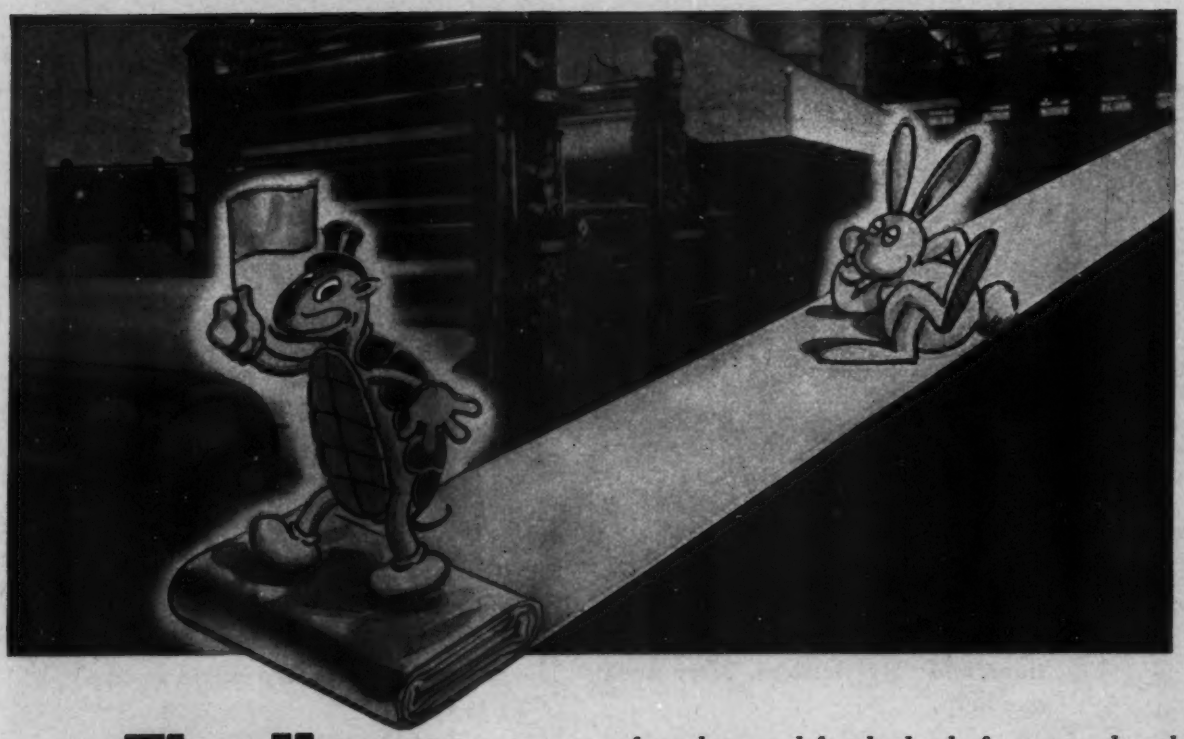

The Hare and the Tortoise

There is a moral for every paper manufacturer in Aesop's fable of the hare and the tortoise. The hare lost because he took too much time out. The tortoise won by continuous, steady effort. • In the race for increased production begin with the wet felt. Be sure it is woven to the correct specifications for your particular type of machine and for the kind of paper or board you manufacture. This is as important as the correct specifications of your furnish. • Have all rolls clean — free from "crumbs." Set the press weight lever at the proper tension. This will prevent frequent stops for adjustment and reduce accidental injury to machine tenders. • Now speed up your machine. Keep accurate record of the steam consumption at the driers. The right felt should pay for itself with what it saves in steam. Measure the life of the felt by the amount of paper produced on it.

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Some of the many Norwood Glassine Calenders at Riegel Paper Corporation mill at Milford, N. J. The machine in the foreground is a 73" Norwood and is running at a speed of 900 feet per minute.

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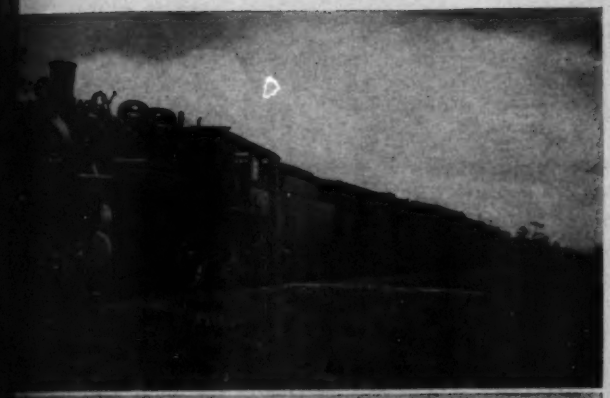
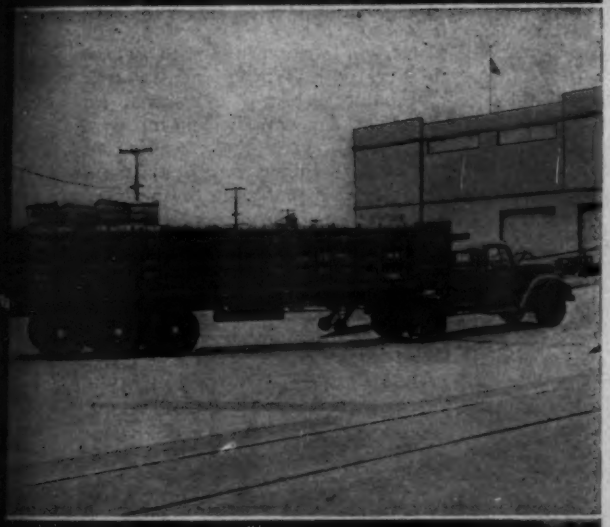
TRANSPORTATION *in the Pulp and Paper Industry*





C. R. HILLYER*

▶▶▶ THE SPREAD OF PAPER AND PULP PRODUCTION over the Nation, following the sources of raw material, and the growth of large markets extending from ocean to ocean, has further centered attention upon transportation costs. Research also has contributed importantly to this dissemination of production and the accompanying transportation problems. The rapid increase in recent years in the different kinds of paper commodities demanded by the constantly rising standard of living has added its full quota of questions that must be determined by the traffic departments. The demand for skilled and experienced traffic assistance to deal with the traffic problems outlined is at once apparent.

Into every ton of product of a pulp or paper mill there are many transportation costs which enter into the competitive price that must be obtained from the consumer. Therefore, the level of the several freight rates on tonnage inbound to the mill that must be paid by the manufacturer, and the relationship of these rates to the rates of competitors become at once a prime consideration of the executives charged with the successful operation of each mill. Of equal concern are the outbound rates on the several products, and the relationship of those rates to the rates paid by competitors to a given market or group of markets.

The great value of this vast tonnage to the railroads of the country as a basis for railroad revenue is a subject of constant study by the railroads, and issues vital to the industry are presented that require the attention of the Interstate Commerce Commission for final determination. It is important to note at this point that the alignment of carriers and manufacurers is geographical. That is to say, the railroads serving a particular producing area, such as the Southwest for example, make common cause with the industry located on their lines in the search for markets, in competition with the railroads of other regions joined with the industry served by them. The same is true of the Northwest, the Southeast and other regions.

As might be expected from the foregoing summary of the facts, there arise from time to time well-ascertained issues of broad scope both geographically and industrially, that must go before an umpire for careful, expert, and intelligent analysis

(*) Attorney at Law, Chicago. The author has had many years experience with the paper industry's transportation problems. He has also been with the Interstate Commerce Commission. For the past twenty years, Mr. Hillyer has acted as attorney for the Wisconsin Paper & Pulp Manufacturers' Traffic Association.

The burden of transportation costs bears with peculiar weight upon the pulp and paper manufacturers. There must be assembled at the mill several carloads of raw material and fuel for each carload of product distributed to consumers. Probably no industry is comparable in this respect except the steel industry.

—AUTHOR'S NOTE.

and decision. The umpire is, of course, the Interstate Commerce Commission, and in the course of years that body has given its time and attention to the transportation questions of this industry in well-known pulp and paper transportation proceedings, with great credit to itself and with fair and beneficial results to the industry and the railroads. While there have been many such proceedings, there are a few that stand out and should be broadly understood by everyone connected with the nationally important pulp and paper industry.

The Classification Of Paper Products For Rate-Making Purposes

In the early days, the rates on paper products were based on the theory that, "paper is paper" and one rate applied upon paper of all kinds. Then the railroads demanded higher rates upon writing and other higher priced papers, or lighter loading papers such as tissues. The first effort at classification of paper into different grades assembled for rate-making purposes was a proceeding before the Commission known as *Official Classification Rates On Paper* (38 I. C. C. 120) in 1916. Lengthy hearings were held and many of the leading paper men of the country and high railroad traffic executives testified. The question of classifying paper for rate purposes was so new and of such far-reaching effect on the millions of dollars of rail revenue involved that no definite results were then obtained. The question remained open for a later investigation.

In 1920, under the leadership of the Wisconsin mills, the subject of classifying paper for rate-making purposes was presented to the Commission by formal complaint, and there resulted therefrom certain rules for classifying paper that have been followed generally down to the present *time. (Minnesota & Ontario Case,* 66 I. C. C. 371). A brief review of that decision is important as it has endured for many years and influences rates today. Various plans of classification were proposed, based upon values, industrial and transportation conditions. In the decision made in 1922 after some two years of investigation, the Commission prescribed a classification embodying such features of all the plans suggested as the Commission felt would promote the interests of both the railroads and the industry.

Newsprint paper was made the base or starting point, because of its large volume. With the rate fixed upon newsprint the rates upon printing and wrapping paper were made 110 per cent of the rate on newsprint. The rates upon writing and tissue papers were made 133 1-3 per cent of the newsprint or base rates. Other kinds of paper were placed in the most appropriate one of these three classifications. The Commission also recognized the important principle of geographical grouping of mills giving the same rates to all the mills in a group. This case fixed the rates on paper of all kinds from the large groups of mills in Wisconsin, Minnesota, and Northern Michigan to the Mississippi Valley extending from Chicago to New Orleans and westward to the Rocky Mountains. The decision has been adopted, followed and confirmed in more than forty formal decisions extending down to the present time. Moreover, the classification of paper articles with the three groups above described has had a strong influence in other regions of the country.

Territorial Rate Regions

This country is divided into regional rate subdivisions known as the Eastern or Official region, the Southeast, Southwest, Central, Western Trunk Line and Transcontinental rate territories. It is not necessary to more definitely define the borders of these regions for present purposes. The railroads in each region determine the rates on all traffic therein including the rates on this industry, independently of the other regions. Then there are the interterritorial rates applying from or to a mill in one region, say the East, to or from locations in another region, such as Chicago in Central territory.

The Great Central Markets

Another outstanding decision of the Commission that both old and young traffic managers must keep before them is the *West Virginia Pulp & Paper Case* (165 I. C. C. 349) 1930. Here the Commission fixed the level of rates upon the immense tonnage of printing and wrapping paper for the heaviest regional movement of paper and paper products, namely, throughout the Central region including the Chicago market, recently described in testimony before the Commission as the largest paper market in the world. This decision also determined the maximum level of rates from the many mills in Wisconsin, Minnesota and Upper Michigan to these desirable Central markets. This decision will continue to influence many rates for years to come.

The Newsprint Investigation

No discussion of the general transportation subject with reference to the paper industry would be complete without mentioning an extensive investigation by the Commission into the rates on newsprint some years ago. The railroads of the country, especially those east of Chicago, conceived the (erroneous) idea that the vast volume of newsprint should be reclassified and the rates thereon drastically increased. They started something. This was in 1929. Hearings were held in various parts of the country from New York to Minneapolis and Florida. In *Newsprint Investigation* (197 I. C. C. 738) 1933, the Commission disapproved the heavy increases proposed by the railroads, and confirmed many of the existing rates, including those it had prescribed from Wisconsin and Minnesota in the M. & O. case already described. This newsprint decision settled a long standing controversy inspired by the persistent efforts of the railroads to greatly increase their already large revenue from newsprint tonnage.

Present And Future Issues

An understanding of the above described outstanding decisions that have brought about the existing rate levels and relationships with respect to the pulp and paper industry over the country generally is essential for a present day appraisement of what lies ahead. With the expansion of the industry from a few well defined localities of manufacture to an almost nation-wide production, every manufacturer now regards the whole Nation as his market. Now, as never before the so-called interterritorial rates have raised new issues that must be settled.

In these controversies, a number of which are now before the Commission, and others appearing upon the horizon, we find the railroads of each region, joined with the manufacturers these railroads serve, lined up against the railroads and the manufacturers of another region. In these contests the parties come in swinging and no punches are pulled.

A further complication that enters into these present and future proceedings is the sharp difference in the general rate levels on all commodities within the different transportation or rate regions, which rate levels are naturally reflected in the rates therein on paper and paper articles. It is the policy of each group of railroads to keep their *local* rates as high as possible, but when a regional line is crossed and interterritorial rate adjustments become the issue, they contend for what is termed a competitive or destination level, regardless of what the level of the intraterritorial rates within their own region may be.

As yet no one has brought forth a logical answer to this question. In one or two decisions touching thereon

(Concluded on page 54)

Electrification of a Modern Paper Mill

RUSSELL G. SEIP and R. R. BAKER

▸▸▸ THE ELECTRIFICATION OF the 100-ton sulphate paper mill of the . . . . . ., at . . . . . ., is an outstanding example of modern engineering. This electrification is characterized by the application of those features of modern electrical design which assure the most economic over-all operation of the mill. In this electrification, full consideration is given to the necessity of maintaining continuous full capacity production under a 24-hour, 7 day-a-week operating schedule. Such "all out" production is practical because of adequate protection of the entire electrical system and a comprehensive maintenance schedule. The present excellent operating results reflect the careful design of the electrical layout developed by the enginering staff of the company in conjunction with Westinghouse's application engineers.

Full advantage is taken of automatic control with centralized control stations which permit close supervision of all sequence operations throughout the plant. Metering of the power service by departments is provided which permits of close supervision of one of the important items of manufacturing costs. All distribution and control equipment is laid out so that an adequate maintenance schedule, so essential to continuous maximum production, may be carried on. In the various motor applications throughout the plant, the motor types have been carefully selected to provide characteristics to best meet the requirements of the particular application. In all cases, motor enclosures have been carefully selected to meet the requirements of the particular motor location.

This mill, with a daily capacity of some 60 tons of bleached or 100 tons of unbleached sulphate papers, has an installed a-c. motor capacity of some 5,379 hp. made up of approximately 150 individual motor units. Of this 5,379 hp. installed, 1,850 is in 80 per cent power factor synchronous motors and the balance, or 3,529 hp., is in induction motor capacity. The induction motors include both squirrel cage and wound rotor types. This division of load between 80 per cent power factor synchronous and induction motor capacity, together with the relatively high operating load factor of the induction motors, results in a very high plant power factor. This high operating power factor makes available the full turbo-generator kv.-a. for active plant load.

Both 440 and 2,200 volt motors are applied throughout the mill, and in practically all cases 2,200 volts has been selected for motor ratings above 50 hp. This particular division of the voltage rating has resulted in the most economical layout of the plant power distribution. Of the 150 motor units only 17, totaling 2,825 hp., are wound for 2,200 volts. These 17 units include the 4 jordan motors, the motors of the paper machine and winder motor generator set, the 5 deep well pump motors, and 6 paper machine auxiliary motors.

In addition to the installed a-c. motor capacity, the mill has a total of 650 hp. in d-c. motors applied to the paper machine and paper machine winder drives. These motors require a total of 400 kw. in motor generator sets for conversion from a-c. to d-c.

The total plant power is generated on a single 3,500 kw., 4,375 kv.-a. 80 per cent power factor, 3 phase, 60 cycle, 2,400 volt, 3,600 rpm, fully compensated, double extraction, condensing, turbo-generator unit. The turbine unit is designed to take steam at 400 pounds pressure, 650 Fahr. total temperature, and to exhaust at 28 in. vacuum, providing automatically maintained extraction pressures of 150 and 50 lb. The turbine also is designed to develop full rated capacity when passing 116,000 lb. of steam per hour and extracting 35,000 lb. per hour at 150 lb. pressure and 70,000 lb. per hour at 50 lb. pressure. The turbine is equipped with a fully compensated governor which permits maintaining very accurate control of the power frequency and the extraction pressures with the normal variations in either electric load or extraction steam demand. The turbine is provided with a gauge board and a complete set of instruments which permit proper maintenance and operation of the unit.

LEFT—3,500-kw. fully compensated, double extraction condensing turbo-generator provides full mill power requirements. 2,300 and 480 volt switchgear structures are located in background; 2,300 volt at left and 480 volt at right. CENTER—3,500 sq. ft. 2-pass surface condenser provided with double inlet and outlet to facilitate maintenance, serves the main turbine unit. RIGHT—2,500 kv.-a., 2,400/480 volt transformer station adjacent to power house, with three 833 kv.-a. single-phase units connected in Delta. Supplies entire 480 volt mill power requirements.

The use of the double extraction turbine unit, together with the high initial steam pressure and temperature, makes it possible to generate power very economically. With the exception of the comparatively small quantity of power which is generated from the steam passing to the condenser, power is obtained as a by-product of the process steam requirement.

The turbine is served by a 2,500 sq. ft., 2-pass surface condenser. A feature of this condenser installation is that the condenser is provided with a double inlet and outlet which permits cleaning the condenser tubes without taking the condenser out of service. Thus a proper maintenance program can be maintained without an interruption of power service.

The generator is arranged for differential protection and is provided with temperature indicators in its windings, which permits intelligent supervision of the operation of the unit. Operating at 100 per cent power factor, the installed generator capacity provides for a mill load factor of 90 per cent in terms of the installed motor capacity. To assure an adequate supply of cool clean air, so essential to continuous operation at full rated load, the generator is provided with a suitable size fan, air-coolers and enclosures, which permit maintaining proper circulation and keeping out dust and dirt.

The full 2,500 kv.-a., 480 volt mill capacity is provided in a single bank of transformers consisting of 3—833 kv.-a. single phase, 2,400/480 volt type SL, oil insulated self-cooled transformers connected in Delta. These transformers are provided with no load tap changers, oil gauge, drain and sampling valves, and thermometers with alarm circuit contacts. These transformers are mounted directly outside of the power house and are interconnected with the 2,300-volt and the 440-volt switching located in the power house.

The 2,300-volt switchgear comprises an 8-section metal-clad switchgear assembly providing 2,300-volt, 3-phase, 60-cycle service to control:

1—4,375 kv.-a. turbo generator
1—Gulf power emergency tie
4—Outgoing mill feeder circuits
1—Feeder circuit to the 2,500 kv.-a. transformer bank

The switchgear assembly is of the most modern design and provides a metal enclosing structure with barriers which segregate the various component parts, including circuit breakers, busses, instrument transformers, etc., from each other. The structure is of dead-front type construction having all meters, relays, and control switches mounted on a hinged instrument panel on the upper section with a hinged door giving access to the circuit breaker compartments below. The structure is provided with removable covers which give access to the various component parts. A ground bus runs the entire length of the structure providing ample grounding for all metal enclosures and reducing the personal hazard to a minimum.

The oil circuit breakers are 3-pole, single-throw, common tank type with de-ion grids and fitted with disconnecting devices and other equipment necessary to form a vertical lift removable unit. Each of the circuit breaker compartments is provided with an elevating mechanism for moving the circuit breaker between the "connect" and "disconnect" position. Each breaker is interlocked so that it is open before it is taken from or placed into the "connect" position.

The breakers have a current capacity of 1,200 amperes on the main generator and transformer feeder circuit and 600 amperes on the other circuits, with a published interrupting rating of 75,000 kv.-a. on a 2-CO duty cycle with 15-second intervals.

All breakers are arranged for solenoid operation from an a-c. control circuit through the use of individual rectox conversion units. Tripping is accomplished from the same a-c. source by means of individual capacitor trip devices. These trip devices provide sufficient stored energy for tripping the breaker under fault conditions even during the loss of system voltage.

The 2,300 volt switchgear provides a Silverstat voltage regulator for the accurate control of the main generator voltage, differential relays for generator protection, two overcurrent relays of the induction type with inverse time characteristics for each feeder circuit, a complete set of indicating instruments including d-c. field ammeter and voltmeter, a-c. ammeter and voltmeter, generator temperature indicator, cycle meter and wattmeter for the main generator, and three indicating ammeters for each of the mill feeder circuits. The main generator circuit and each of the mill feeder circuits are also provided with watthour meters. Each circuit breaker is provided with a control switch and indicating lights and a set of test jacks are provided for each relay and for the watthour meters to permit testing and adjusting.

The 480-volt switchgear consists of a 4-section, metal-enclosed structure which provides 480 volt, 3 phase, 60 cycle service for control of 7 mill feeder circuits. The structure is of dead front construction and includes two breaker compartments and a meter cabinet mounted vertically above each

LEFT—Control center for 2,200 volt squirrel-cage induction motor provides oil immersed, magnetic, full voltage starters with combination boric acid fuse and disconnect switch mounted in sheet metal cabinet. Arrangement affords protection for both motors and feeder circuits. CENTER—Splash- and drip-proof enclosures provide ample protection against dripping liquids and hosing operations for these squirrel-cage induction motors driving vacuum pumps. RIGHT—Located in the open, this splash- and drip-proof squirrel-cage induction motor which drives a bleach tank agitator is fully protected against the weather.

other. Each section is arranged for control of two feeder circuits, seven of which are in service and one which serves as a spare. A type DA-60, 3-pole, manually operated, air circuit breaker, 3 ammeters, and a watthour meter are provided for each feeder circuit. The circuit breakers are mounted in the breaker compartment in the rear of the hinged front panels and are equipped with operating handles which project through the panels and are operated from the front of the structure. The circuit breakers have a current capacity of 600 and 800 amperes depending upon the capacity of the circuit which they serve. They also have an interrupting capacity of 50,000 k.-va. Each circuit breaker is equipped with two inverse time limit overload trip coils. In addition to the meters and circuit breakers the structure also houses the bus and all instrument transformers. It is provided with removable covers for inspection and louvers for proper ventilation.

Power is distributed to the various load centers throughout the mill by means of feeder circuits radiating from the power house. There are a total

480 Volt Feeders

Turbine and boiler room—350 hp. motor load.

Recovery-evaporator and causticizing —382 hp. induction motor load.

Finishing room—283 hp. induction motor load.

Wood room and yard—308 hp. induction motor load.

Jordan and machine room—309 hp. induction motor load.

Bleach plant—395 hp. induction motor load.

Digester, diffuser, and screen room —517 hp. induction motor load.

The feeder circuits are installed with rubber-covered, single conductor, double braided, stranded cable with three conductors carried in a single metal conduit. For the 2,300 volt feeders 2,500-3,000 volt class 30 per cent rubber, and for the 480 volt feeders, 600 volt class, 30 per cent rubber is used.

Each mill feeder circuit, with the exception of the deep well pump feeder, terminates in a control center, which center provides an enclosed bus structure to which the branch motor circuits are connected. The deep well pump feeder terminates in an overhead pole line, which extends for some 3,000 ft. to the various well locations. On all 2,200 volt control centers type BA disconnecting fuses are installed between the bus and the motor primary switch or contactor forming a part of the magnetically operated motor control. These high voltage, boric acid fuses provide 110,000 kv-a. interrupting capacity and instantaneous short circuit protection, as well as a means for disconnecting the motor circuits from the bus. This arrangement in addition to providing adequate motor circuit protection limits any motor fault to the individual circuit and permits of inspection and repair of the circuit without the necessity of taking the main feeder out of service.

On each of the 480-volt control centers a metal enclosed bus structure is mounted at the top of a rack on which the individual motor disconnect switches and linestarters are mounted. In addition to the individual motor control circuits, each of these centers also provide a no-fuse lighting distribution center for the particular plant area involved with the lighting transformer mounted adjacent to the structure. The centers also provide a special receptacle to which portable welding units may be attached for plant maintenance work in the particular area.

The major portion of the motors throughout the plant are provided with splashproof and dripproof enclosures. With this construction special baffles serve to prevent either dripping or splashing liquids from reaching the motor windings. The air passages as well as the rotor fans are proportioned so that the motors may meet their normal open ratings without exceeding a safe temperature rise.

LEFT—High momentary peak load and accelerating capacity is provided by this 150 hp., 900 rpm. wound rotor, induction motor driving the chipper. CENTER—These 350 hp., 400 rpm. 80 per cent P.F., synchronous motors provide efficient drives for the fordans, and at the same time maintain high plant power factor. RIGHT—One of five 75 h.p., 1,800 rpm. vertical squirrel-cage motors with enclosure for outdoor location driving deep well pump.

of 4—2,300-volt and 7—480-volt mill feeder circuits including the following:

2300 Volt Feeders

Jordan motors—1,400 hp. in 80 per cent p. f. synchronous motor loads.

Paper machine and winder motor generator sets—450 hp. 80 per cent p. f. synchronous motor and 150 hp. induction motor loads.

Paper machine 2,200 volt auxiliaries—450 hp. induction motor loads.

Deep well pumps—375 hp. induction motor loads.

This type of enclosure provides ideal protection for many of the paper-mill applications where the motors must be protected against liquids or direct "hosing."

In the causticizing and recovery rooms, where chemical dust and fumes are encountered, the motors are of the totally-enclosed, fancooled construction. This construction provides a complete enclosure for the motor windings which effectively seals them against the surrounding atmosphere. To provide adequate ventilation of the enclosed motor windings dual ven-

tilation is provided. Circulation of the air within the frame as well as on the outside of the frame is maintained by means of two fans mounted on the motor rotor, one within and one outside of the frame. To insure adequate cooling which requires the maximum exchange of heat, the frame is constructed with internal and external air ducts which provide large areas over which high velocity air circulation is maintained. This type of enclosure effectively protects the motor winding against the chemicals which are so destructive to their insulating properties.

For the conveyors and agitator drives throughout the mill, NEMA Class C—high torque, low starting current, squirrel-cage motors are applied. These motors provide the feature of high starting torque (approximately 225 per cent), which assures satisfactory starting even with excessive static friction which is frequently encountered in the operation of these drives.

At various locations throughout the plant gearmotors are applied where low intake shaft speeds are encountered. These compact, factory assembled combination motor and gear units provide the advantages of maintained high efficiency and low operating cost through integral motor and gear construction, balanced motor and gear design, and accurate alignment of rotating parts.

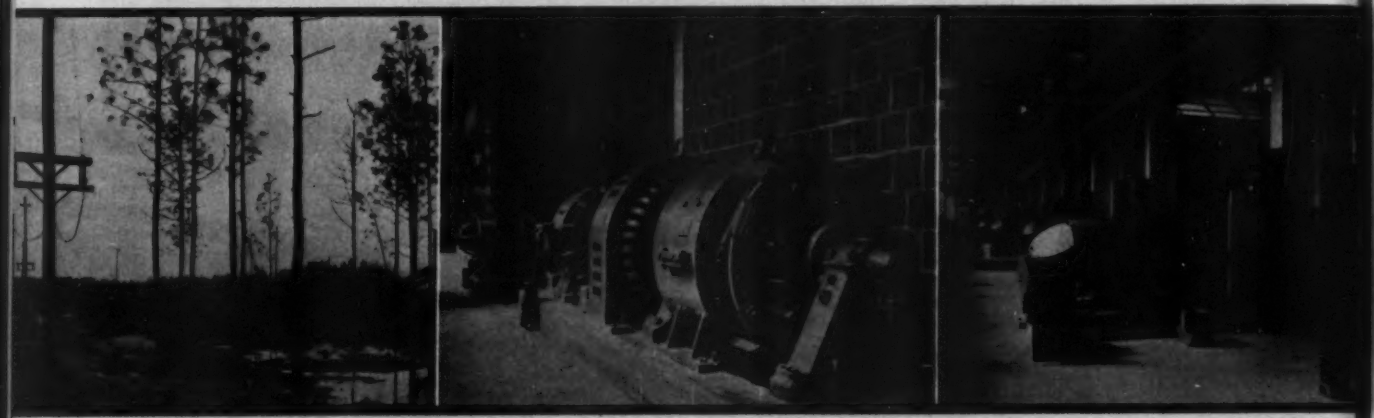
A 75-hp., splashproof, 720 rpm, 440 volt, wound rotor induction motor is belted to the 10 ft. diameter, 30 ft. long barking drum manufactured by the Carthage Machine Works. This motor is provided with a magnetically operated primary switch and a manually operated secondary drum controller. The application of the wound rotor induction motor provides the features of high starting torque and controlled acceleration. These features insure consistent starting under varying conditions of loading and safe acceleration within the limits of capacity of the belt and other mechanical parts.

The 12-knife, 84-in. diameter Carthage chipper is driven at 450 rpm by a 150 hp., open, 900 rpm, 440 volt, wound rotor induction motor through V-belt drive. The motor is provided with a magnetically-operated primary contactor and a manually-operated secondary drum controller. The wound rotor induction motor is ideally suited for this application, as it provides high momentary peak load capacity which prevents interruptions to the process with the occasional introduction of large diameter tough logs to the chipper. This type of motor also provides the maximum capacity for accelerating the high inertia load of the chipper to full speed, as practically all of the losses incident to acceleration are dissipated in the separately mounted secondary resistors.

Each of the four Shartle Brothers Miami No. 5 Jordans is direct coupled to a 350 hp., 2,200 volt, 400 rpm, 80 per cent power factor, bracket type synchronous motor. Each motor is provided with a magnetically-operated, full voltage starter equipped with oil immersed primary contactor, field contactor, definite time field application relay, pull-out protection relay, thermal overload relay, and time delay, undervoltage protection. The four controllers are mounted in cubicles and assembled as a group, which group is served by a common bus. Each individual control is connected to this bus by three type BA fuses arranged for disconnect service and mounted in enclosing metal cabinet. "Start-stop" pushbutton stations are provided which are located at the jordans. These 80 per cent power factor synchronous motors together with other synchronous motors permit operating the plant at close to 100 per cent power factor and provide for efficient operation of the jordans. The synchronous motors are designed for 50 per cent starting, 50 per cent pull-in, and 150 per cent pull-out torque characteristics and permit proper operation of the jordans under the normal mill conditions. The controllers are equipped with the necessary protective devices to prevent damage to the motors under either adverse or faulty operating conditions.

The total mill fresh water supply is obtained from five wells located on the property. The five Layne vertical, centrifugal, deep well pumps serving these wells are driven by 5—75 hp., 2,200 volt, 1,800 rpm, vertical squirrel-cage induction motors. These motors, which are mounted in the open, are provided with weatherproof enclosures. The pump motor controllers consist of oil immersed contactors mounted in weatherproof cases which are located, adjacent to the motor locations at the base of the pole supporting the overhead power line. Each controller is connected to the power line through a set of type BA combination fuses and disconnect switches mounted on a cross arm on the pile directly above the controllers. A weatherproof "start-stop" pushbutton station is located on the controller which provides convenient control of the pump at the pump location.

The paper machine is driven by a



LEFT—2,200 volt pump motor power line with pole mounted pump control station combined with a set of boric acid fuses which also serve as disconnects. CENTER—Motor generator set with coupled "starting" generator which furnishes power to the sectional drive on the 158-in. paper machine. Exciter, master set, and automatic control appear in the background. RIGHT—Driving side of paper machine showing enclosed forced ventilated d-c. section motors and gears. Similar units serve to drive the 8 sections of the paper machine over an operating range of 200 to 1,000 fpm.

Westinghouse sectional electric drive which represents the latest developments in this modern form of drive for paper machines. The paper machine, manufactured by the Black-Clawson Company, is a 158 in. wide fourdrinier designed to operate over a speed range of 200 to 1,000 fpm. The machine includes a couch, two suction presses, two dryer sections, smoothing press, a calender, and uniform speed reel. The paper machine is served by a two-drum winder manufactured by the Cameron Machine Company. The winder is designed for a threading speed of 50 fpm and a maximum productive speed of 2,500 fpm. The winder is driven by a Westinghouse adjustable voltage, d-c. winder drive.

The sectional paper machine drive equipment includes a 300 kw., 250 volt, d-c. motor generator set with a d-c. starting generator, two 125-hp. motors and gears for the couch and calender sections, two 75-hp. motors and gears for the two dryer sections, two 50-hp. motors and gears for the two press sections, a 30-hp. motor and gear for the reel, a 20-hp. motor and gear for the smoothing press, a 3-unit exciter set, motor driven blower, complete a-c. and d-c. control, speed regulating and metering equipment.

The features of this drive include: The extremely accurate electronic voltage regulators for the main generator, and the constant voltage exciter, assuring accurate maintenance of the operating speed of the machine; the full-automatic "Westinghouse starting generator system" of section motor control giving complete control of the machine and its individual sections from a master control cabinet, and individual section control stations conveniently located at the front of the machine; the Westinghouse carbon pile type of section differential speed regulator providing extremely high speed response by means of exclusive field forcing and anti-hunting features, thus assuring accurate maintenance of draw; the separately driven master set which prevents a speed disturbance on any section from interfering with the speed of the other sections of the machine; Westinghouse patented "sag-back" control applied to the last dryer section which prevents a "snap-off" at the calender or reel from interfering with the draw between other sections of the machine.

The winder drive includes a 100-kw. induction motor generator set and a 100-hp., 230-volt, d-c., 690 rpm motor arranged for V-belt drive. The winder control consists of a combination drum type master switch and field rheostat with "stop" pushbutton and socket ammeter for location at the operators' station, and with automatic control forming a part of the paper machine drive control board. This d-c. adjustable voltage winder drive provides a uniform threading speed and smooth acceleration to maximum operating speed, performance which is so essential to full capacity output of the winder and properly wound rolls.

The electrification of the mill was under the direct supervision of Russell G. Seip, chief engineer of the . . . . . Company. Hardy S. Ferguson, consulting engineer, served in an advisory capacity, and the Rust Engineering Company installed all equipment. The entire electrical equipment including turbine generator, condenser, transformers, switchgear, mill motors, mill motor controls, sectional paper machine drive and winder drive was designed and built by the Westinghouse Electric & Mfg. Company.

This most modern of modern mills established an outstanding performance record when it was originally placed in operation in August 1941. At that time the mill management announced that "9 minutes from the time the gate of the head-box was opened, a clean, well-formed sheet of paper was on the reel and the machine ran without a stop for 6 hours." Since that record-breaking start, the plant performance has fully met the highest expectations of its designers. Not only has the plant reached its maximum design capacity of 100 tons per day, but it already has exceeded that production by some 20 per cent.

EDITOR'S NOTE: The omissions indicated within this article (. . . .) were made to conform with the Government's censorship code which all publishers have been asked to observe.

SAFETY *in this* *Battle of Production*

JEROME E. PINCKNEY
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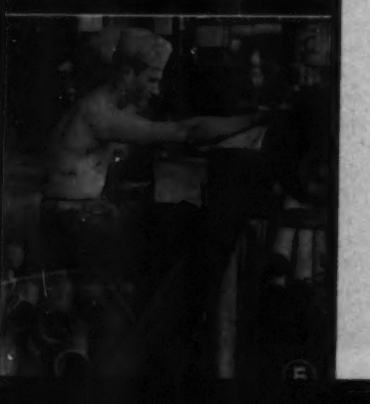
▶▶▶ WITH THE UNITED STATES at war, it is the patriotic duty of every industrial employee who is connected in any way with national defense activities to produce to the utmost of his abilities. Paper is so important to the war program that this sort of effort must be the goal of every pulp and paper mill employee.

There are a number of ways to increase production. It is doubtful, however, if there is an easier way than the elimination of unsafe operating practices. Each accident of any consequence not only makes a valuable worker useless during a period of convalescence, but it also indirectly hinders production, since a less efficient workman frequently must be put in the injured man's place.

An unusually effective way of going about the task of eliminating unsafe practices, as used in the Savannah (Georgia) mill of the Union Bag and Paper Corporation, is to photograph



unsafe acts and to display such photographs in an 8-in. by 10-in. size on conspicuous bulletin boards.

To obtain these photographs, it is the practice for an employee witnessing an unsafe act on the part of another to report the act and not the violator. Then the reporter is asked to re-enact the incident and the photograph is made. Captions placed on the posted photographs explain the unsafe acts, relieves the persons appearing in the photographs of blame, and also gives the names of the actors. Each actor also is given a print in which he appears, after the photograph has served its purpose. In all instances, employees have looked upon these little gifts as ample rewards and have offered excellent co-operation.

Since the system was originated, many unknown unsafe activities have been brought to light. In fact, some of the unsafe practices which have been reported are believed to be fictitious. Yet, as long as a worker is thinking "Safety," the idea is accomplishing its purpose.

The accompanying illustrations with captions are typical of some of the unsafe practices which have been uncovered and corrected to a very great extent by the procedure that has been outlined.

1 - Feeling for "wrinkle" on rolls in motion is an invitation for arm amputation. This is an old paper habit which is dangerous and should be discontinued. Proper lighting will make all "wrinkles" visible and detectable without feeling for them.

2 - A fourth hand inserting his knife between moving rolls in an attempt to cut the overlapping paper. This practice may save time at the moment in separating the rolls, but in the end the safe way is the quickest.

3 - An overanxious papermaker reaching in the nip of a winder for the sheet. That piece of machinery has teeth like a tiger and should be treated with the same caution as would be shown such an animal.

4 - A clean workplace is to be admired, but the proper time to remove paper from under a winder is not while the winder is in motion.

5 - Statistics show that 100 per cent of all amputations from core saws occur to the left hand. Just think how accidents of this kind could be eliminated if all operators were required to pull the saw with the left hand.

6 - The best kinds of materials are put in cranes and cables but they have

been known to fail. Persons who walk under reels of paper are taking dangerous chances.

7 - In many places, ropes are run on shafts to prevent the slipping of rolls. This operation should be done when a shaft is turning at a slow rate of speed, and then only after all knots in the rope are removed.

8 - Some people insist upon using an air hose to clean floors. When an air hose is used in this manner, every person in the vicinity of the work should be cautioned and the user of the hose should wear goggles.

9 - Games and tricks are excellent for relaxation; but horse-play in the mill, such as squirting water on an innocent bystander or sliding down a broke beater chute, is taboo at all times.

10 - It's remarbable what a new pair of pants and shoes, and a clean undershirt can do for a man from a Safety as well as a sanitary point of view.

11 - The nails in the board may be new, but they might harbor thousands of tetanus (lockjaw) germs which could cause a horrible, and usually fatal, sickness. All nails should be removed from discarded boards immediately and not after they have been placed in a pile or, perhaps, strewn on the ground.

12 - A ladder, unless properly placed, often slips. It should either be held at the foot by a helper or tied by rope to an upright.

13 - The eye is the most delicate and vulnerable mechanism of the body. Willing but untrained hands should never replace the skill of first aid attendants in removing a speck or dirt particle from it.

14 - Comparatively small, miscellaneous material, such as brick, should never be hoisted with a rope sling because of the possibility of such objects falling from it, thus creating an accident hazard. A bucket placed in a basket made of steel straps has proven very satisfactory in this service.

An intensified Safety program on the part of every pulp and paper mill will aid the industry in doing its share in winning "This Battle of Production."

Wetting-out Agents

C. B. KINNEY
E. F. Houghton & Co.

▶▶▶ THE USE OF MODERN WETTING-OUT AGENTS has spread almost like wildfire from one industry to another since their advantages became known only a few short years ago. Today, industrialists everywhere are examining their wet processes to determine whether these chemicals will be of assistance in them. They are induced to do so by observing the very efficient, and sometimes nearly magical results obtained.

The textile industry, which was largely responsible for developing these products, has always had a need for efficient wetting out. Consequently, the research and development of such products have been fostered and promoted at all times by that industry.

The designation "wetting-out agent" is to a large extent self-explanatory to the scientist, who knows it to be a type of surface-active chemical. This latter term may be confusing to the layman who does not understand surface activity. In simple words, surface active chemicals are chemicals or compounds which effect the relationship between two surfaces and tend to reduce the forces which keep them apart. In even simpler language, a wetting agent is a chemical which makes water wetter and causes any material in water to become wet very rapidly.

Before the development of the modern wetting agent, it was found that soap, when added to water, had the property of wetting out any one of various substances when it came in contact with the solution, more quickly and thoroughly than in water alone. Therefore, it may be said that, generally speaking, soap was the first product of this particular class to be used regularly in industrial operations as a wetting-out agent.

Sulphonated oils having better wetting-out properties than soap were developed a number of years ago. Since their origin, they have been used in a great many industries. Both textile manufacturers and paper mills consume large quantities.

Improvements on the sulphonated oils were made by combining soaps or sulphonated oils with pine oil, or by combinations of all three. Their wetting-out properties were superior to the sulphonated oils alone. For a number of years these mixtures were in regular use where wetting-out ability was a requirement.

Due to constantly increasing organic research, many new chemicals have been developed in the past fifteen years. Consequently, wetting agents have improved in efficiency to an extent where products formerly used can no longer be considered in the same class.

Today there are literally hundreds of so-called wetting-out agents on the market. Many of them have exceptional virtues. Some of them possess a relatively low money value, based on the relative efficiency according to price and concentration required. Hence prior to selection, a wetting-out agent should be evaluated with great care.

The majority of the best types of wetting-out agents listed approximately in the order of their development fall into the following chemical classifications:

1) Soaps
2) Sulphonated oils
3) Sulphonated alkyl naphthalenes
4) Sulphonated higher alcohols
5) Fatty amid & ester sulphonates
6) Sulpho succinic esters
7) Alkyl benzene sulphonates
8) Higher secondary alcohol sulphonates
9) Alkylene oxide-fatty acid condensations and Alkylene oxide-fatty alcohol condensations
10) Fatty acid amine condensations
11) Higher alcohol phosphates

Fatty alcohol acetates might be added to the above list, but they are of minor industrial importance.

If an examination of the chemical character of these products is made in the order named, it will be found that development of agents based on fat as a raw material, such as soaps and sulphonated oils, was followed by production of straight synthetics.

It was found that the synthetic products, while excellent wetting-out agents, had practically no detergent properties. Attention was, therefore, re-directed to materials having fats as a base and attempts made to produce products combining wetting ability and detergency. Experiments met with considerable success. Detergents were produced which had none of the objectionable features of soap and which operated under conditions where soap could not be used. However, in a number of instances, it was found that excellent detergents were produced, but the degree of wetting-out ability was not all that might be desired.

Next followed development of synthetic products utilizing lower-cost raw materials. Recently, attention has been re-directed to fats as raw materials, and it is possible that the cycle will be repeated as research continues.

When the first synthetic products were introduced, the costs were high, hence they were utilized only in processes where they could pay their way. Newer developments, introduction of new processes, and the utilization of cheaper raw materials have cut costs tremendously. Today, efficient wetting-out agents are selling at prices which permit practically any industry to employ them freely wherever they can be used to advantage.

Modern wetting-out agents include practically all products classified herein. They are sold under various trademarked names. Some of them are mixtures of one or more of the classified chemicals, together with soaps, sulphonated oils, or other materials. Others are dissolved in water to a standard strength. Some, particularly those in dry form, are mixed with neutral salts such as sodium sulphite or salt, and contain from 10 per cent to 50 per cent of the active ingredient. In many instances, the active ingredient in its pure form is expensive; and the diluted product, compared to other materials on the market, offers an attractive price to the trade and a performance comparative to competitive materials.

A practical method of evaluating a wetting-out agent, to determine its wetting-out property, is the Draves test. This test is made by immersing a standard weight skein of cotton yarn in a known solution of the wetting-out agent, by means of a weight attached to the skein by a flexible cord. The time required for the skein to sink is measured with a stop watch. This method is quick, accurately comparable, and a reliable measure of wetting strength. The test should be used with a known standard, as a slight variation will be found from day to day, due to varying humidity.

With this method, it is possible to measure the speed of any wetting-out agent and to compare it with any other. By varying the strength of solution, money value comparisons are readily computed. The more efficient products can be diluted to low con-

centrations, yet still retain good wetting-out ability.

Another good method of evaluation of surface active agent is to measure the surface tension of the solution. This measurement gauges accurately the tendency of the product to reduce surface tension but does not measure the actual wetting-out ability of the chemical. A good wetting-out agent will invariably have a low surface tension, but a product having a low surface tension is not necessarily a good wetting-out agent.

A more recent method of gauging wettting-out ability involves the measurement of interfacial tension, testing resistance between the product and an oil film.

Both of the latter methods are scientifically accurate, but neither parallels practical applications. It is generally considered that the Draves test is of greater value in actual practice.

It is very possible that in the paper industry a test paralleling the Draves test could be set up, utilizing a standardized paper pulp or fiber instead of cotton yarn.

In addition to straight wetting-out ability, many surface active chemicals possess detergent properties. Others have softening and lubricating properties. These varying qualifications permit a selection of the proper agent for use where more than mere wetting-out ability is required. Sometimes wetting agents may be employed for purposes where wetting-out ability is of secondary consideration.

These surface active agents as a whole show good stability in hard water. Consequently, those possessing detergent properties are very useful for scouring purposes under conditions where soaps are ineffective. The presence of any quantity of mineral salts in water causes precipitation of the soap, destroying its scouring properties and producing a formation of metallic-soaps. Many synthetic detergents are more effective as scouring agents in hard water than in soft.

It is common to find that many of the compounds are also effective in fairly strong acid or alkaline solutions.

Obviously, these chemicals are not all stable under all conditions. None so far discovered can be claimed to be wholly ideal.

An ideal surface active agent should have the following properties:

1) A good wetting-out agent or penetrant
2) An efficient scouring agent or detergent
3) A good emulsifying agent
4) A good dispersing agent
5) A chemically neutral material
6) Easily soluble in water
7) Easily rinsed out of fibrous materials
8) Chemically stable to all conditions under which it can be used
9) Inexpensive

Since it is a fact that all of these properties cannot be found in a single product, it becomes necessary to select those properties most desired, and then fit the wetting-out agent by evaluation to the conditions governing the situation.

The textile industry consumes vast quantities of these various compounds. It is common to find practically all of the wetting-out processes in this industry employing one of these agents for one purpose or another. Other industries, noting their successful application, have for some time been examining the principles involved so that today even the steel industry is using these chemicals for specific applications.

Within the past few years the paper industry has also turned its attention to these products and now consumes a considerable quantity of them.

It was at first thought that a substantial advantage would be gained in the pulp industry if it were to utilize these products in its digestion process, but up to the present, little advantage has been noted. However, it is quite possible that by proper selection of compound, digestion may be improved.

It was also believed that considerable time could be saved in the beaters if one of the surface active agents were used. Here again, while some saving in time has been achieved, it cannot be said that this application has been extenseive.

Any good agent should produce a fast wetting-out speed in solution, but this does not necessarily mean that the product will impart to the material treated a quick wetting back, or water absorption property. As a matter of fact very few wetting-out agents will impart water absorption properties to fibrous material. A few, however, have this property, and when a fiber is treated with a solution of one of them, and dried, it will have water absorption properties which in some instances may be practically instantaneous.

It is this wetting back ability which is of particular interest to the paper industry, especially to mills manufacturing towel, tissue and blotting paper. Paper treated in this manner has water absorption properties far in excess of untreated paper. In many instances, it will permit use of a pulp of lower grade and having minimum water absorption efficacy. For this purpose, however, the wetting agent must be carefully selected.

In applications of adhesives and coatings, addition of a properly selected type of wetting-out agent gives a better dispersion and better spreading properties, and accomplishes a quicker and more uniform result.

Some wetting-out agents have a thinning effect on many solutions of starches, gums, etc. Without doubt this property can be utilized to some extent, in the paper industry at least, in cases where it is desirable to lower the viscosity of a solution.

Each paper mill, particularly those manufacturing products other than straight run types of paper, offers an individual problem, and the application of wetting-out agents must be worked out to fit the individual case.

The use of wetting-out agents in the paper industry is so recent that it is not possible at this time to determine all advantages obtainable by use of such compounds. New applications are being developed and it can be expected that further continuous research by paper chemists and technicians will uncover many new practical uses.

The designation "wetting-out agent" is to a large extent self-explanatory to the scientist, who knows it to be a type of surface-active chemical. . . . In simple words, surface active chemicals are chemicals or compounds which effect the relationship between two surfaces and tend to reduce the forces which keep them apart. In even simpler language, a wetting agent is a chemical which makes water wetter and causes any material in water to become wet very rapidly.

THE BOARD MILL LABORATORY

E. F. BOYLE, Chief Chemist
Bloomer Brothers Company

▸▸▸ A WELL-EQUIPPED chemical and paper testing laboratory, manned by a competent crew, is a necessary adjunct to every mill engaged in the manufacture of paperboard. Working closely with production operations, the average mill laboratory is responsible for the testing of raw materials, technical control of the various processes throughout the mill, testing of the finished product or products, and for such research as the laboratory budget and time will permit.

To do this work, the laboratory must be supplied with suitable reference books, necessary chemicals, and the required apparatus.

The library need not be large. A few essential books would include individual copies of volumes III, IV and V of *The Manufacture of Pulp and Paper*, a set of TAPPI Standards, a good handbook for chemists, a handbook containing mechanical engineering information, a dictionary of chemical terminology, some recognized work on standard methods of chemical analysis, and fundamental textbooks on qualitative and quantitative analysis. In addition, the library should include several of the periodicals pertaining to the pulp and paper industry, as well as catalogues of chemicals and chemical apparatus of a few of the supply companies.

General chemical laboratory

The chemicals and chemical apparatus required of the mill laboratory would be such as would permit the making of most of the chemical tests covered in TAPPI Standards and in the volumes on qualitative and quantitative analysis. The laboratory also should include such equipment as is necessary for performing the usual physical tests on both pulp and board. This equipment, like the chemical apparatus and chemicals, of necessity, will vary somewhat with the type of board being manufactured.

If the same grade of board is to be made each time a certain formula is used, there should be practically no variation in the chemical and physical properties of the fibrous and nonfibrous materials of the furnish. The laboratory should determine the desired characteristics of the fibrous raw materials and set them up as purchasing standards for use by the purchasing department. In the case of pulp, the common procedure is to follow the standards adopted by the Technical Association of the Pulp and Paper Industry.

Probably the moisture test made by the pulp manufacturer as the pulp leaves the dryers, wet press, or hydraulic press is as accurate as can be made. Such figures as furnished by the supplier may be accepted by the board mill, or added tests can be made. If the board mill is to make moisture tests on pulp, several men of the warehouse crew should be trained in the correct procedure for sampling and should be held responsible for doing the job, an occasional checkup being made by the laboratory to be sure that all is well. Then, too, the weighing of the samples, before and after drying, and the calculations making use of these figures is the work of the laboratory force.

At the time of sampling for the moisture test, a separate sample, cut with the same care, should be taken from the pulp and used for the making of physical tests on the fiber. The most popular method of determining the strength characteristic of pulp makes use of a 1½ lb. beater equipped with a controlled bed plate. The behavior of the pulp is measured by variations in freeness and also in bursting, tensile, tearing and folding strength as observed in handmade paper prepared in a standard way from the pulp so treated.

Strength tests of this kind are seldom made on soda, aspen sulphite, and groundwood pulps. Fiber fractionations and initial freeness tests are usually the only tests made on groundwood.

The color of pulp is another important consideration, and brightness is the color quality that is usually measured.

Dirt and foreign particles in pulp can be evaluated roughly by counting the number of specks in a handsheet of known weight. The identity of the dirt usually can be determined by chemical or microscopical tests.

A laboratory check on the purity and chemical properties of the nonfibrous raw materials also is to the board mill's best interest.

The laboratory should be ready at all times to assist the production departments in working out any mill problems in line with its work. Troubles that crop up in the various processes and certain defects that appear in the finished sheet, caused by some chemical disturbance, may be eliminated more easily by this co-operation.

In most of the control work involving the various chemical and technical processes, the laboratory acts largely in a supervisory capacity, assisting and guiding the mill men trained to do the routine tests. Sometimes, however, it may be necessary for the laboratory, because of the complexity of a problem, to do the actual testing itself. It also should accept the responsibility of keeping the testing equipment about the mill in good working order.

Paper testing laboratory

Among the processes in an average board mill that need laboratory supervision are: water conditioning for both process and boiler feed; chlorination or equivalent treatment of the stock system and the paper machine for the elimination and prevention of slime growths; *p*H, freeness and consistency control of stock; preparation and emulsification of rosin size; application of calender colors and coatings; and the sampling of finished board for any physical tests that are to be made.

The paper testing laboratory should be separate from the general chemical laboratory, at least, there should be a partition between them. Where possible, the paper testing laboratory should be under constant humidity and temperature control, 50 per cent relative humidity and 73 F. (23 C.) having been adopted as the official standard by the Technical Association of the Pulp and Paper Industry in October, 1941. It also is a good plan to have the paper testing laboratory as near the dry end of the paper machine or machines as possible in order to minimize lost time between the taking of samples and the testing of them. To keep a constant check on the sheet, there should be a man on duty for sampling and testing at all times that the mill is in operation.

Equipment essential to the paper testing laboratory would include the following instruments: a bursting strength tester, a stiffness tester, a tear tester, and if the board is sized, an instrument to test sizing characteristics. Other instruments that could be used if the board being manufactured would warrant the investment in them, would be: a tester to determine sheet smoothness, a color tester, and a tester to determine sheet density.

Information covering the results of such physical tests as are made should be available to the backtender, machinetender, and tour boss as well as to anyone else in authority who may be interested in them. By making the data available to the machine crew, variations from standard can be corrected by making adjustments on the machine, or, if necessary, by changing the furnish or by altering the procedure of stock preparation.

All paper testing information should be saved, averaged, and recorded so that, at least once a year, the physical standards of any sheet may be revised if necessary. Likewise, by saving daily test results, it is possible to check back with little trouble on any run of board made.

The amount of research work that can be done by the mill laboratory depends upon its size, equipment, staff, budget, product or products manufactured, and the amount of testing and control work required of it. If the laboratory staff is kept busy on routine testing and control work, very little time can be given to new investigations. In any event, whatever the conditions, a certain amount of research work must be done if the mill is to keep up with competition. Time spent on research, however, would be wasted unless the mill management is willing to adopt new ideas.

Research may be directed along lines designed to improve the products already being manufactured, to develop entirely new products, to improve present methods or to develop new methods of processing and manufacture, or to improve general conditions throughout the mill. Ideas developed within the mill may be worked out. Products of competitors may be analyzed for possible points of superiority. Other mills may be visited and studied. Various trade magazines and literature of the paper industry should be studied systematically. Whatever the program, it is up to the management of each mill to decide how far to go and to so equip the laboratory that this work may be done.

Freeness testing equipment

Transportation . . .

(Continued from page 42)

the Commission has tried to balance the scales so as to prevent undue advantage for any one group of railroads or mills, and thereby preserve the widest competition. A representative decision dealing with interterritorial rates is *Paper From Southwest to Official Territory* (238 I. C. C. 136) 1940. In that decision the Commission denied the high level of rates proposed by the Official territory railroads from the Southwest to Central or Official territory, for the evident purpose of keeping out the products of the industry located in the Southwest.

Rail, Truck, Water Transport

In the early thirties, the monopoly of transport theretofore enjoyed by the railroads began to weaken. Other forms of transport were becoming a real challenge. The old monopoly minded rail executives did not wake up, especially in some regions. As late as 1933, their counsel told the Commission in an advanced rate case, where the railroads were seeking a horizontal advance in all rates, that the railroads were well advised on the subject of motor competition. That even at the worst the trucks could never get more than 6 per cent of the tonnage of the country, and that they would probably fall short of that. The trucks have actually gotten 30 per cent of the total rail tonnage, and the railroads fear further losses.

In the face of this truck competition, the railroads continued to harm themselves by seeking horizontal increases in all rates including the raw materials and finished products of the pulp and paper industry. When the railroads finally attempted to meet this competition of motor and water carriers the damage was done. The fact that certain railroads promptly met this competition and as a result have retained the bulk of the tonnage seems significant.

Motor carriers seem especially adaptable for the paper and pulp industry. The movement of the raw materials and the products of the pulp and paper mills by motor carriers increased in some areas by leaps and bounds. The Commission, when it was finally given control of motor carrier rates in 1935, immediately tried to put the breaks on this shift of tonnage by prescribing minimum truck rates for common carrier trucks, but this had little or no effect because of the rapidity and efficiency of motor carriers in handling these products. A considerable tonnage shifted from the common carrier trucks to contract trucks thus escaping the minimum rate scales. Then, when the Commission in 1940 was given control of contract rates many of the large manufacturers bought their own trucks and became private carriers and thus escaped again. The rapid growth of this private carriage is now going on, and it is difficult to see how any law can deny any manufacturer the use of his own vehicles with which he serves himself and no one else. The keenly competitive situation in this industry, and the relatively heavy burden upon it of transportation charges hereinbefore discussed, has played an important part in the developments touched upon.

While water transport is not available for all manufacturers, where it is possible, the paper and pulp industry has employed it with great satisfaction as to costs and efficiency of service. There is a heavy water movement on the Great Lakes of newsprint which the railroads did not compete for until it was too late. There is a substantial and growing water movement from the South and Southwest up the Mississippi River and to the important Chicago district. From the South Atlantic and gulf ports where the industry has had a remarkable growth in the past five years there is a steady and growing water movement to the large Eastern markets. Pulp from Fernandina, Florida, has been successfully moved via ocean and lake all the way to Chicago. Certainly, it would seem reasonable for the railroads to meet such competition, as this water movement requires one or more rehandlings enroute.

While the employment of motor carriers and water carriers by this industry is comparatively recent, these carriers have come to stay, and are of increasing importance while the Nation is in a state of war. Certainly the post-war period will find entirely different issues for the industry to solve, and the developments of the present and future will require constant observation and study.

Conclusion

It may be stated finally that there probably is not a railroad rate of transportation on pulp or paper products, or the raw material from which these commodities are made, that is not the handwork of the Interstate Commerce Commission, either as to its level or its relationship with other rates. From some years of direct contact with the Commission's work as hereinbefore briefly outlined, it seems apparent that the subject will never become static.

The advent of new forms of transport and the increase of administrative power by changes in statutes involve a process that will continue into the future. Far greater complications and problems exist today than when there was only the rail carrier and the rail rate. There are rapid and fundamental changes in the industry constantly going on from which new transportation questions of serious import repeatedly arise. These problems do now and will continue to demand the closest study from day to day of men of thorough training and experience.

"Perfect Shipping"

▶▶▶ HAS YOUR MILL ever experienced any damage to paper which has been attributed to careless handling on the part of the consignee, or perhaps even to the careless packaging and loading by your own employees? If your mill has had such a problem (and what mill has not) you will be interested in a nation-wide campaign of "Perfect Shipping."

This campaign has been sponsored each April, beginning with the year 1937, by the Shippers Advisory Boards in conjunction with the Association of American Railroads. This year, the campaign is planned not only for the month of April, but for the duration of the War.

The purpose behind this movement is to promote good packing, secure loading, and careful handling of all shipments by shipper, railroads, and receivers. To awaken a wider interest in the campaign, the sponsors have prepared a wartime poster which is graphic and colorful. The design is the same, but the posters are made up for three groups: one for the shipper of freight; one for the receiver of freight; and one for the railroads. An illustration of the poster with information as to how it may be obtained will be found on page 24 in this issue.

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▶▶▶ GOVERNOR JULIUS P. HEIL, presiding at a "victory window" opening at a department store in downtown Milwaukee recently, appealed to the throng jamming the street outside to "Come on in and buy 'em."

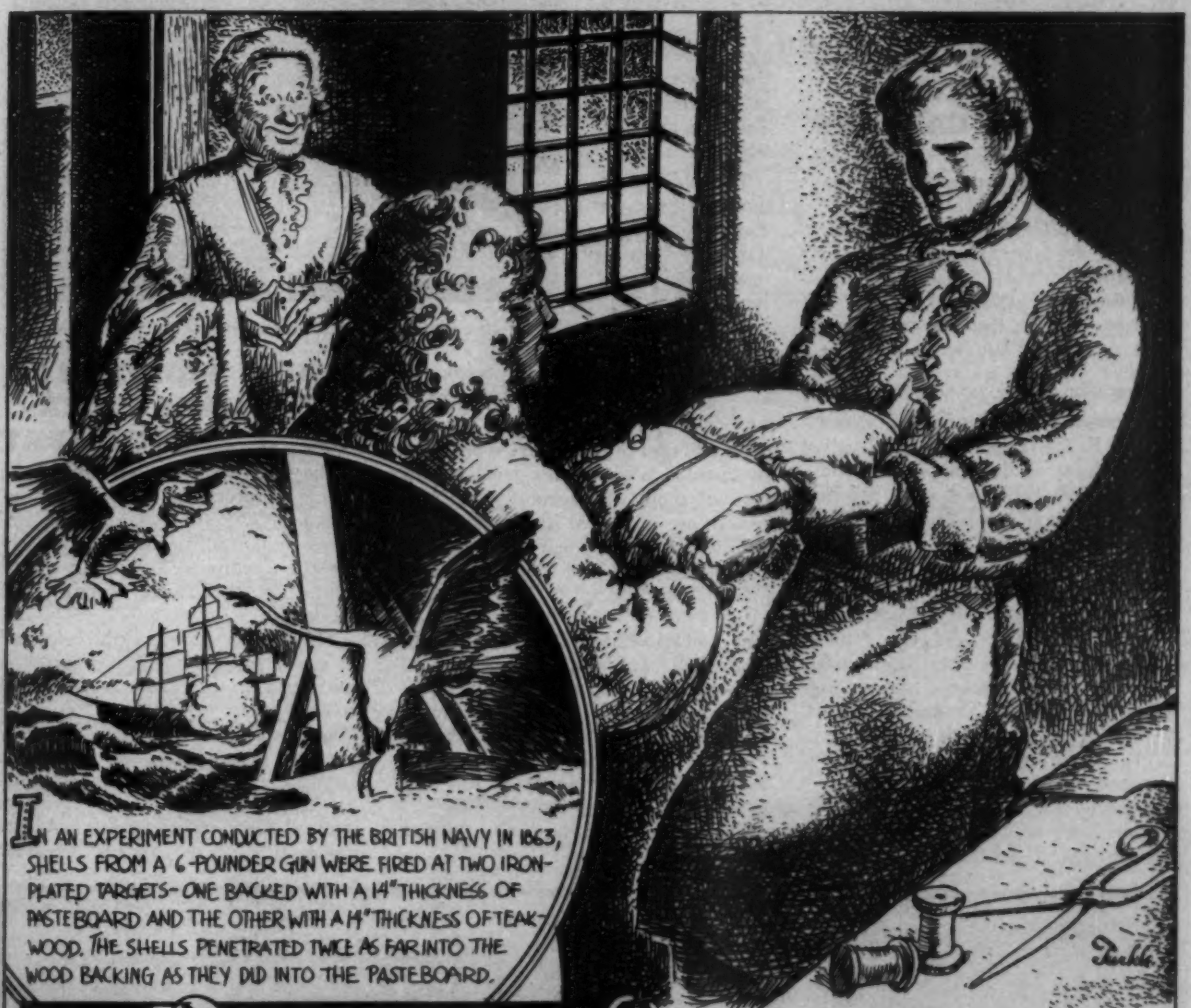
His first customer was an 11-year old youth, who purchased a $25 bond.

"How did you earn the money, my boy?" asked the Governor.

"I sold old papers and junk," was the reply.

The Governor turned to the bond sellers and said, "Give this youth another $25 bond and charge it to me."

PAPER SKETCHES



IN AN EXPERIMENT CONDUCTED BY THE BRITISH NAVY IN 1863, SHELLS FROM A 6-POUNDER GUN WERE FIRED AT TWO IRON-PLATED TARGETS - ONE BACKED WITH A 14" THICKNESS OF PASTEBOARD AND THE OTHER WITH A 14" THICKNESS OF TEAK-WOOD. THE SHELLS PENETRATED TWICE AS FAR INTO THE WOOD BACKING AS THEY DID INTO THE PASTEBOARD.

GOOD FITTING PAPER PATTERNS WERE CONSIDERED SO VALUABLE BY BRITISH TAILORS OF THE 1700'S THAT THEY WERE REGARDED AS CHERISHED TRADE SECRETS. OCCASIONALLY A MASTER WILLED HIS PAPER PATTERNS TO FAVORITE SONS OR GAVE THEM TO APPRENTICES UPON ATTAINING THE STATUS OF JOURNEYMEN.

IRENE — BYZANTINE EMPRESS IN THE EARLY 1100'S, LEFT 3 COPIES OF STATUTES REGULATING RELIGIOUS HOUSES - ONE ON PAPER MADE FROM COTTON FIBER; THE OTHER TWO, ON PARCHMENT.

NEWSPAPER ROLLS OF 99 DIFFERENT WIDTHS, MANY OF WHICH VARY BY ONLY FRACTIONS OF AN INCH, ACCORDING TO RECENTLY PUBLISHED INFORMATION, ARE REQUIRED TO SATISFY DEMANDS OF DAILY NEWSPAPER PUBLISHERS FOR PAPER UPON WHICH TO PRINT EIGHT COLUMNS OF 12 EMS.

ALLIED

GOODRICH PROGRAM FOR SALVAGING USED CARTONS

When the necessity for conserving paper in all forms, and especially boxboard and paperboard, became apparent last year, The B. F. Goodrich Company set up a special department for renovating cartons which had been used, and were capable of re-use.

A total of more than 34,000 of these have now been handled by the department, and at an average of two pounds apiece a total of about 80,000 pounds of boxboard saved, according to F. C. Hammond, chief package engineer of the company. Under previous practices, not only in this company but generally throughout industry, these cartons would have been classified as scrap and sold as such.

During the first three months of the department's operation, August, September and October last year, a total of 15,627 cartons were sorted, reconditioned and placed into stock for use again. In November-December another 10,000 were salvaged, in January 5,717, while the number in February dropped to 2,661.

One of the operations in making cartons ready for re-use is stripping all sealing tape, and labels, and blanking out all stenciling from the carton so as to eliminate all difficulty in resealing and marking.

In addition to the carton conservation program, the company, which annually receives millions of cylindrical paper spools carrying cotton yarn from its textile mill in Silvertown, Georgia, is now returning these spools to the mill for re-use.

In addition to these steps a program of instruction has been carried out so that all those who handle boxes and cartons are instructed how to properly handle and open them so they will not be damaged and can be re-used.

◆

▶▶▶ BUSINESS MEN ALL OVER THE COUNTRY will be deeply interested in the important change made in the operation of Manning, Maxwell & Moore, Inc. This firm is liquidating its Railway and Mill Supplies Division at Jersey City, New Jersey, in this way making the total inventories immediately available to industries that need them.

Atkins oldtimers mark 36th anniversary of Pioneers Club.

ATKINS PIONEERS CELEBRATE THEIR 36TH ANNIVERSARY

The thirty-sixth anniversary of the Atkins Pioneers, an organization of oldtimers of E. C. Atkins and Company, Indianapolis, Indiana, was observed on February 28 with an annual banquet at the Hotel Severin Roof Garden.

The 20-year service club welcomed 21 new members at this meeting with gold service pins. This made a total in that group of 299.

Exchange pins are given for every five years of additional service to those having a record of from 25 to 62 years. At the meeting this year 50 members received these exchange pins. A special feature of the awards this year

In this model, air-conditioned inspection room in the Atlas Ball Division of SKF Industries, Inc., Philadelphia, girls wearing white gloves scan balls and rollers for surface defects with the same degree of visual concentration needed in detecting flaws and scratches on costly jewels. The white gloves protect balls and rollers from moisture.

was that the company's president, Henry C. Atkins, Sr., and Charles Fenton were honored with 60-year pins.

Last year the 50-year club for those with service from 50 to 62 years was organized with 161 members.

◆

HERCULES SETS UP CHEM. FELLOWSHIP

Hercules Powder Company has announced the establishment of a fellowship, to be known as the Pine Chemicals Fellowship, at Mellon Institute of Industrial Research at the University of Pittsburgh for the year 1942. Dr. George B. Feild of the Institute will be the fellow.

The purpose of the fellowship will be to develop new uses for rosins, and will emphasize applications of these materials in the war effort. The fellowship continues the company's policy of expanding the uses of naval stores products, turpentine, pine oil, and rosin, and the products which may be derived from these basic chemical materials.

◆

PEERLESS PUMP ACQUIRES TWO PUMP DIVISIONS

Following a progressive plan for plant expansion, Peerless Pump Division of the Food Machinery Corporation, Los Angeles, California, and Canton, Ohio, announces it has acquired the Sterling Pump Corporation, Hamilton, Ohio, and Stockton, California.

The newly acquired Hamilton plant will be consolidated with the company's Hamilton plant; the Stockton plant will be merged with the John Bean Manufacturing Company Division of the Food Machinery Corporation, San Jose, California.

In connection with this expansion movement, Vernon Edler, vice president and general manager of the Peerless Pump Division, has indicated that a new development in pump design will soon be given out.

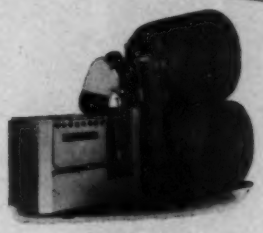
◆

JAS. F. LINCOLN WELDING CONTEST CLOSES JUNE 1ST

The present $200,000 Progress Program sponsored by The James F. Lincoln Arc Welding Foundation is attracting great interest. Officials report that a number of papers have already been received, and the total number of requests for copies of the Rules and Regulations concerning awards has al-

*Mercury Fork Truck does Triple Duty

for this large Michigan Paper Manufacturer

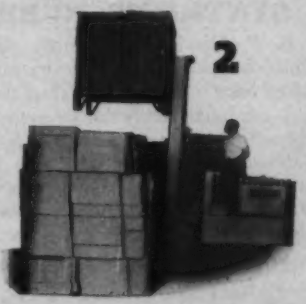


1

*One Mercury Center Control Fork Truck performs three distinct handling jobs for this large paper manufacturer — the handling of paper in rolls . . . on skids . . . on pallets. The result has been greatly reduced handling costs, faster service and full utilization of available storage space.

Mercury Hydraulic Hoist and Tilt insure full control of fork movement at all times. The operator is enabled to raise and lower forks to exact intended elevation and thus quickly stack and remove loads despite minimum available clearances.

Learn how Mercury Fork Trucks can help you to faster handling at lower cost. Write for Bulletin 210.



2

3

Mercury Pioneered and Perfected These Lift Truck Improvements:

The Hydraulic Lift
Snap Action Cam Operated Controller
Single Unit Double Reduction Drive Axle
All Welded Frame
Special Trail Axle Design

MERCURY TRACTORS TRAILERS LIFT TRUCKS

MANUFACTURING COMPANY 4102 S. Halsted St., Chicago, Ill.

ready exceeded the former program by approximately 50 per cent. It is expected that the papers submitted in this contest will contain information which will be extremely helpful to industries engaged in the war effort.

The Progress Program closes June 1, 1942, and to qualify papers must be postmarked not later than June 1.

◆

▶▶▶ WHAT IS CLAIMED TO BE the world's longest hand lift truck has just been delivered to Johns-Manville & Sons by The Yale & Towne Manufacturing Company. This truck is 168 feet long and is a special adaptation of the standard Yale Load King Hydraulic Lift Truck.

This Yale Hand Lift Truck, said to be the longest ever built, accommodates seventeen men. It is designed to handle wall board and roofing.

◆

GOODRICH READY TO MAKE AMERIPOL, SYNTHETIC RUBBER

B. F. Goodrich Company, Akron, Ohio, has announced that its laboratories have completed successful tests and are now ready to go into production of Ameripol Hard Sponge Rubber. This comes as a real innovation in synthetic rubber manufacturing. Ameripol, through one application after another, has been proving its remarkable adaptability in replacing natural rubber. All possible uses for this new synthetic hard rubber have not yet been explored, but among known uses is its suitability on specialized insulating and float jobs where an oilproof, waterproof, and acidproof material is required. Specific data may be secured by writing direct to the company.

◆

PITTSBURGH PLATE GLASS APPOINTS TUCKER TO BOARD

Succeeding H. A. Galt, R. B. Tucker, director of glass sales of the Pittsburgh Plate Glass Company, has been elected to the board of directors of the company. Mr. Galt is retiring after more than 40 years of continuous service. He was one of the founders of a chemical business in Barberton, Ohio, that later became the Columbia Chemical Division of the Pittsburgh Plate Glass Company.

Mr. Tucker became associated with the Pittsburgh Plate Glass Company in 1929, when he was appointed manager of glass sales.

◆

▶▶▶ A SUBSTANTIAL ENLARGEMENT of the Bailey Meter Company's Field Engineering Staff has been necessary to meet the increased demands for metering and control equipment to speed production in war industries. Fourteen engineers have been assigned to field duty.

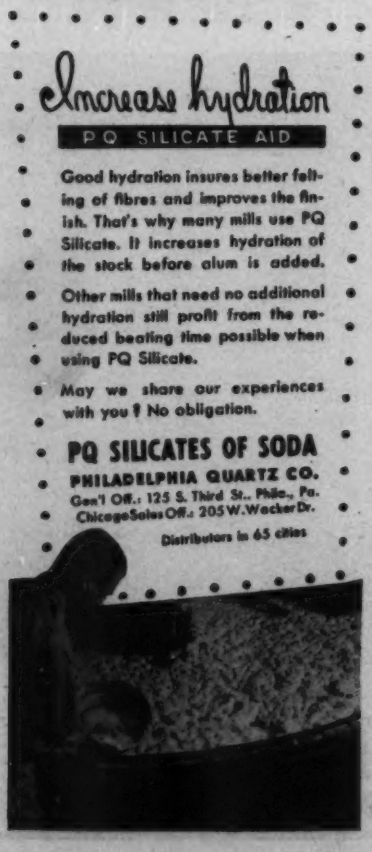
▶▶▶ AT THE ANNUAL MEETING of D. J. Murray Manufacturing Company, Wausau, Wisconsin, the last week in March, all officers were re-elected: F. C. Boyce, president; M. P. McCullough, vice president; J. S. Alexander, treasurer; and C. E. Staky, secretary. Mr. Staky is general manager of the company. At the annual stockholders' meeting in February, all directors were re-elected. In addition to the officers, D. C. Everest, W. L. Edmonds, and Grover Keeth are directors of the company.

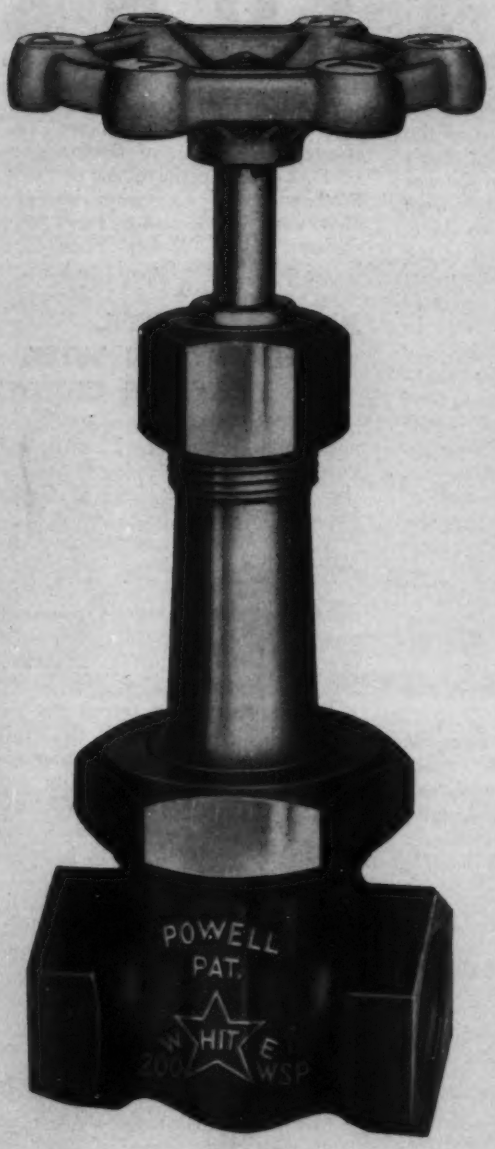
◆

▶▶▶ AN ELECTRONIC control section has been organized in General Electric's industrial control division to meet the rapidly expanding field of industrial electronic control. *Allen E. Bailey, Jr.*, has been appointed sales manager; and *William D. Cockrell* has been appointed engineer. Mr. Bailey will report to G. R. Prout, and Mr. Cockrell to E. H. Alexander, manager and engineer of the division respectively.

◆

▶▶▶ A DRAMATICALLY ILLUSTRATED brochure just released by Allis-Chalmers Manufacturing Company, Milwaukee, is entitled "We Work for Victory and We Plan for Peace." Nearly every phase of the nation's industrial production is beautifully illustrated in this fine publication; it shows what products the company is making under wartime conditions.


Increase hydration
PQ SILICATE AID
Good hydration insures better felting of fibres and improves the finish. That's why many mills use PQ Silicate. It increases hydration of the stock before alum is added.
Other mills that need no additional hydration still profit from the reduced beating time possible when using PQ Silicate.
May we share our experiences with you? No obligation.
PQ SILICATES OF SODA
PHILADELPHIA QUARTZ CO.
Gen'l Off.: 125 S. Third St., Phila., Pa.
Chicago Sales Off.: 205 W. Wacker Dr.
Distributors in 65 cities



The valve shown is especially adapted for the paper industry . . . designed to withstand the toughest mill usage. It is a 200-pound bronze Gate Valve—Fig. 375—with screwed ends, inside screw, rising stem, union bonnet, and special, hard nickel-bronze disc. Can be repacked under pressure when wide open. Available in sizes from ¼" to 3".

A GOOD NAME

You don't build a good name in a day or a year. It comes from doing a good job for a long time. After that, people begin to expect a good job from you and they bring their business to you for that reason.

We've been at our job a long time. Just four years short of a century. All these years we've been making valves. With each new industrial development in which valve design has played a part we've made new valves or adapted existing models to changing needs. In each instance our efforts have met with the approval of the Industry which was served.

This experience has taught us to expect changes and to be prepared for them. It has led us to build up a well trained engineering and research department fully equipped to handle new valve problems as they arise in the Progressive march of American Industry.

The Powell Line itself is evidence that we have not been idle. The ever-increasing demand for Powell stock valves and Powell engineering service is a constant reminder that the job we have been doing all this time has satisfied our clients, and has given them reason to expect that it will continue to be good. This is, in our conception, the meaning of a good name.

The Wm. Powell Company
Cincinnati, Ohio

POWELL VALVES

ASSOCIATIONS

PAPER—THE LIFEBLOOD OF CIVILIZATION

▶▶▶ HOW IMPORTANT is the paper industry to the defense program? Is the paper and pulp mill worker doing a job that is essential to winning the war? If he is, does he believe so? Has he been given a picture of the part that he is playing in this program? If not, the industry has a job to do to keep him on the job feeling that it is the place for him to be.

A manufacturer's public relations effort needs to consider its own employees and their families, its customers and the public, including its governments and educational facilities. To assist the industry in its public relations program within its own family, the Technical Association of the Pulp and Paper Industry has underwritten at considerable expense, the preparation of a 24 page (8½x11 in.) booklet entitled *Paper—The Lifeblood of Civilization.*

Copies have been sent to the executive head of every company in the industry with the request that they get behind this important program by obtaining enough copies to distribute to every employee together with a personal letter from the president of the companies to their employees and families pointing out the essential status of the industry at the present time. Companies have already ordered from 1000 to 20,000 each and the first printing has run to 100,000 copies. It is hoped that paper mill executives will awaken to the necessity of doing a real public relations job to do what they can to minimize the labor turnover, already in progress, due to a full appreciation by workmen of the importance to national defense of staying on the job and operating their beaters, grinders, machines, digesters, etc.

This book written by Ralph A. Hayward, president of the Kalamazoo Vegetable Parchment Company and president of the Technical Association is dedicated to the 500,000 workers directly engaged in the industry. It is profusely illustrated with photographs showing the vital part played by paper, not only in everyday life, in education, business, but also directly in the war economy.

It takes 36 times as many men working in the factories today to keep a soldier in the field as it did in Napoleon's time. That means that today's war is a total war and that none of us can escape direct participation in the defense effort. Paper weaves itself through almost every phase of the war effort. About 1,000 tons of paper were required for the first registration alone. More than 900 forms are used in the Army alone. Twenty million paper bags were used by soldiers to carry lunches in the recent maneuvers in Louisiana. Government bonds now outstanding would weigh about 2,000,900 pounds. About 30,000 pounds of blueprint paper are required in the building of a battleship. Building papers, papers for sanitary uses, cartons for a multitude of uses, shell containers, code books, hospital supplies, printing, wrapping and writing papers are a few of the kinds of papers required to make the war effort possible and to run smoothly. The job of making these papers is a vital one. The pulp and paper industry is represented as an important branch of the War Production Board.

The case for the paper industry in defense is a clear-cut one and it needs to be told to the men on the job in a way that will inspire their wholehearted cooperation. It is doubtful if this story can be told more clearly, graphically or convincingly than it is done in *Paper—The Lifeblood of Civilization.*

Copies of this important publication may be obtained from the Technical Association of the Pulp and Paper Industry, 122 East 42nd Street, New York, N. Y. The price is nominal.

(EDITOR'S NOTE: A facsimile of the cover of this book appears on page 12 of this issue.)

◆

N. Y.-CAN. SUPTS. AND EMPIRE STATE SEC. TAPPI MEETING

A joint meeting of the Empire State Section of TAPPI and the New York-Canadian Division of the American Pulp and Paper Mill Superintendents Association will be held May 15-16 at Hotel Syracuse, Syracuse, New York. Full details of the program are not yet available, but the usual business sessions will be held, and there will be a visit to the laboratories of the New York State College of Forestry the second morning of the convention. There will also be many entertainment and sports features both for the men and the ladies.

R. F. Huntley, chief chemist, Sealright Corporation, Fulton, New York, is general chairman of the meeting: H. D. Cook, superintendent of Sweet Brothers Paper Company, Phoenix, New York, is chairman of the TAPPI section, and J. Wesley Youngchild is chairman of the Superintendents.

◆

ANNUAL SUPTS. CONVENTION WILL FEATURE CLINIC

In announcing first plans for the annual meeting of the American Pulp and Paper Mill Superintendents Association, which will be held at Grand Rapids, Michigan, June 16-18, some very helpful and timely innovations have been mentioned.

The thought back of all arrangements for this year's meeting is one of giving the industry the support it needs under the wartime regulations imposed upon it.

It has already been agreed that the keynote of the meeting this year should be "Maintenance and Conservation," and the Association has met with enthusiastic support in this direction by its Industrial Affiliates. Suggestions from the Affiliates have resulted in tentative arrangements for at least one full afternoon program during the annual meeting to be devoted to a clinic on "Maintenance and Conservation." First plans call for a clinic covering eight basic subjects to be presented by practical suggestions, discussions, and questions and answers. These eight groups would be as follows:

1) Paper Machine and Converting Equipment Maintenance

2) Maintenance of Refining Equipment

3) Maintenance of Pulping Equipment

4) Maintenance of Power Equipment

5) Conservation of Chemicals, Dyestuffs, and Inorganic Supplies

6) Maintenance of Pumps

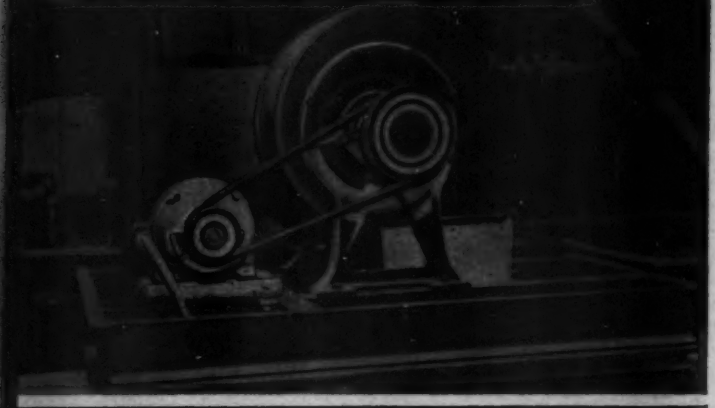
7) Paper Machinery Clothing Maintenance (Wires and Felts)

8) Maintenance of Control Instruments

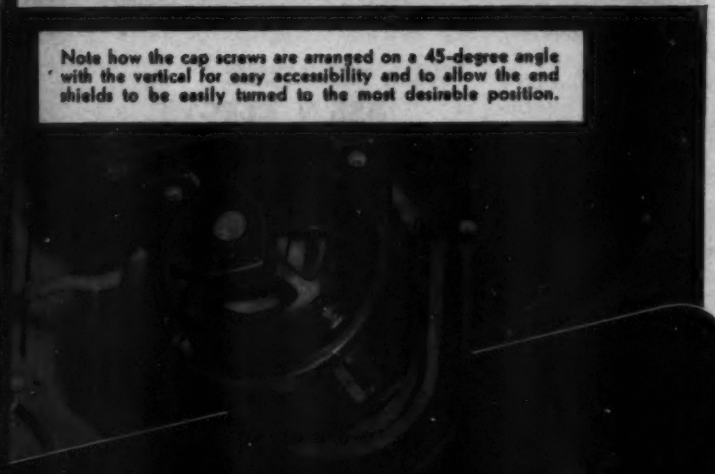
Later announcements will contain more specific details, but the plan already points to a meeting that will be exceptionally timely and most helpful in helping superintendents to find answers to many perplexing problems.

YOU TOO CAN SAVE TIME... TROUBLE

Settling dust gets nowhere with this Tri-Clad motor—driving a blower. Its sleeve-bearings are sealed against dust and dirt by complete enclosure in cast iron.



Note how the cap screws are arranged on a 45-degree angle with the vertical for easy accessibility and to allow the end shields to be easily turned to the most desirable position.



SPECIFY

1. *Extra Protection* AGAINST PHYSICAL DAMAGE
2. *Extra Protection* AGAINST ELECTRICAL BREAKDOWN
3. *Extra Protection* AGAINST OPERATING WEAR

Tri-Clad motors are now available up to 100 hp in standard, open construction, and in a wide range of other types and ratings. Ask your G-E representative for complete details, or write General Electric, Schenectady, N.Y.

1,466 ... by using

TRI-CLAD MOTORS

REG. U.S. PAT. OFF.

on your FANS and BLOWERS

MANY fans and blowers must be installed high above the factory floor, or in awkward locations where working space is limited. Here's where the Tri-Clad motor becomes a real time-saving aid to hard-pressed installation crews hurrying to get vital equipment into production.

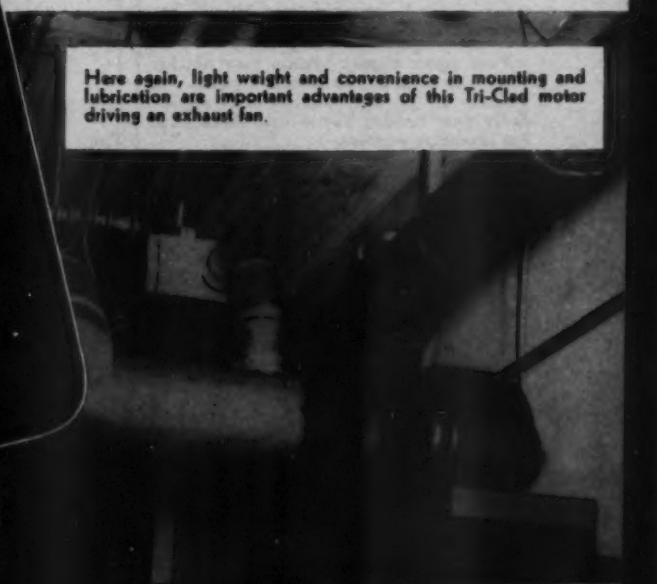
Tri-Clad motors are a cinch to install because of their light weight and compactness. Also, their shape facilitates ease of handling, by hand or with slings. Four-position end shields permit flexibility in mounting, and the roomy four-position conduit box affords unrestricted working space. All leads are permanently identified. In addition, Tri-Clad features facilitate lubrication and other routine maintenance.

Specify Tri-Clad motors on your next order. You, too, will find that they save precious man-hours when you're installing equipment essential to the war program.

BUILT FOR PROTECTION FIRST . . . TO LAST!

General Electric and its employees are proud of the Navy award of Excellence made to its Erie Works for the manufacture of naval ordnance.

Here again, light weight and convenience in mounting and lubrication are important advantages of this Tri-Clad motor driving an exhaust fan.



GENERAL ELECTRIC

A Story——

WE DARE NOT TELL!

The scene might be in the Western Plains Country, or it might be somewhere near sea water, but regardless of location, it is a story that can't be told now. Never have such water systems been constructed. The idea is entirely new and is of major importance to the armed forces.

One fact worthy of note is that Layne was called on to drill the wells, furnish and install the pumps and to fulfill other important missions. In record time, everything has gone through on schedule. The task, though entirely new and very complicated, was handled by Layne engineers as if their usual methods had been employed.

It is characteristic of Layne to meet and conquer unusual well water supply problems. Layne engineers are trained for unforeseen eventualities. To fulfill the requirements of the Government was difficult, but promptly and satisfactorily accomplished.

Your water supply system may not involve any such highly secretive plans, but whether in the conventional or of an entirely new nature, Layne can serve you. For literature address

LAYNE & BOWLER, INC.
Memphis, Tenn.

LAYNE
PUMPS & WELL WATER SYSTEMS

Affiliated Companies

Layne-Arkansas Company.....Stuttgart, Ark.
Layne-Atlantic Company.....Norfolk, Va.
Layne-Central Co.....Memphis, Tenn.
Layne-Northern Company.....Mishawaka, Ind.
Layne-Louisiana Company.....Lake Charles, La.
Layne-New York Co.....New York City.
Layne-Northwest Company.....Milwaukee, Wis.
Layne-Ohio Company.....Columbus, Ohio
Layne-Texas Company.....Houston, Texas
Layne-Western Company.....Kansas City, Mo.
Layne-Western Co. of Minn.....Minneapolis, Minn.
Layne-Atlantic Development Corp. Boston, Mass.
International Water Supply, Ltd...London, Ont.

CONVENTIONS AND COMING EVENTS

April 14-16—All-Ohio Safety Congress, Deshler-Wallick Hotel, Columbus, Ohio.

April 14-17 — American Management Association Packaging, Packing, and Shipping Conference and Exposition, Hotel Astor, New York.

April 17-19 — Southeastern Div. American Pulp and Paper Mill Superintendents Association, spring meeting, Jefferson Hotel, Richmond, Virginia.

April 18—Annual Ladies' Night, Michigan Division American Pulp and Paper Mill Superintendents Association, Park American Hotel, Kalamazoo, Michigan.

May 5—Tentative dinner meeting of the Pacific Coast Section of the Technical Association of the Pulp and Paper Industry at Vancouver, B. C.

May 8-9 — Spring meeting of the Northwestern Division, American Pulp and Paper Mill Superintendents Association, Wisconsin Rapids, Wis.

May 14-16—Pacific Coast Paper Conference, Del Monte, California.

May 15-16—Joint Meeting of Empire State Section of TAPPI and New York-Canadian Division of Superintendents Association, Hotel Syracuse, Syracuse, New York.

June 16-18—Twenty-third Annual Meeting of the American Pulp and Paper Mill Superintendents Association, Grand Rapids, Michigan.

Sept.—Twentieth Annual Conference of the National Industrial Advertisers Association at the Hotel Traymore, Atlantic City, New Jersey (date to be announced).

Sept. 28-29—Fall meeting of the Technical Association of the Pulp and Paper Industry, Hotel Statler, Boston, Massachusetts.

Oct. 5-9—The Thirty-first National Safety Congress and Exposition at the Stevens Hotel, Chicago.

Nov. 17-22—National Chemical Exposition, at the Stevens Hotel, Chicago.

STATED MEETINGS

Technical Association of the Pulp and Paper Industry.

Delaware Valley Section—First Friday of each month—Engineers' Club, Philadelphia.

Kalamazoo Valley Section — First Thursday of each month—Park American Hotel, Kalamazoo, Mich.

Lake States Section—Second Tuesday of each month—Conway Hotel, Appleton, Wis.

New England Section—Third Friday of each month — Roger Smith Hotel, Holyoke, Mass.

◆

WIS. TRAFFIC ASS'N ELECTS NEW OFFICERS

At the annual meeting of the Wisconsin Paper and Pulp Manufacturers' Traffic Association held March 24, it was voted to continue the Association through the year 1943.

Officers elected at the meeting were:

The Paper Industry Safety Scores

July 1, 1941 to June 30, 1942

17 mills have perfect record out of 188 reporting for February

PERFECT SCORES
Division I—Pulp and Paper Mills

PARTICIPANT	MILL	LOCATION
GROUP A		
GROUP B		
Hoberg Paper Mills, Inc.	Division "A"	Green Bay, Wis.
St. Croix Paper Co.	Woodland	Maine
GROUP C		
American Writing Paper Corp.	Parsons Div.	Holyoke, Mass.
The Mead Corporation	Harriman Div.	Harriman, Tenn.
American Writing Paper Corp.	Crocker Div.	Holyoke, Mass.
Marathon Paper Mills Co.	Ashland	Wisconsin
GROUP D		
U. S. Gypsum Company	Oakmont Mill	Oakmont, Pa.
*U. S. Gypsum Company	Board Mill	Lisbon Falls, Me.
U. S. Gypsum Company	North Kansas City	Missouri
Spaulding Fibre Co., Inc.	Milton	New Hampshire
American Writing Paper Corp.	Mt. Tom Division	Holyoke, Mass.
*International Paper Co.	Livermore No. 11	Livermore Falls, Me.
*International Paper Co.	Riley No. 22	Riley, Maine
Spaulding Fibre Co., Inc.	Hayes	New Hampshire
Division II—Paper and Board Re-Manufacturing		
Thilmany Pulp & Paper Co.	Bag Mill	Kaukauna, Wis.
Bird and Son, Inc.	Roofing Plant	Shreveport, La.
Bay West Paper Co.	Green Bay	Wisconsin

*February report missing—covers seven months only.

President, E. H. Jennings, vice president of Thilmany Pulp and Paper Company, Kaukauna, Wisconsin; Vice President, W. Irving Osborne, Jr., president of Cornell Wood Products Company, Cornell, Wisconsin; and Secretary-Treasurer, J. E. Bryan.

◆

ANNUAL MEETING OF LAKE STATES TAPPI

The annual May meeting of the Lake States Section of the Technical Association of the Pulp and Paper Industry will take place at the Hotel Beaumont in Green Bay, Wisconsin, on Friday, May 22.

Golf will be played at the Oneida Golf Course during the day, and many prizes will be awarded. The dinner will be held at the Hotel Beaumont at 7:00 o'clock in the evening, and entertainment will be provided.

SAFETY

CAN. ASSOCIATION 1941 ACCIDENTS SHOW REDUCTION

The following facts were brought out at the 27th annual meeting of the Ontario Pulp and Papermakers Safety Association held in Toronto, Canada. Ontario pulp and paper mill employment in 1941 was 11.8 per cent above 1940, the highest ever recorded, and 31.7 per cent above the average for the past ten years.

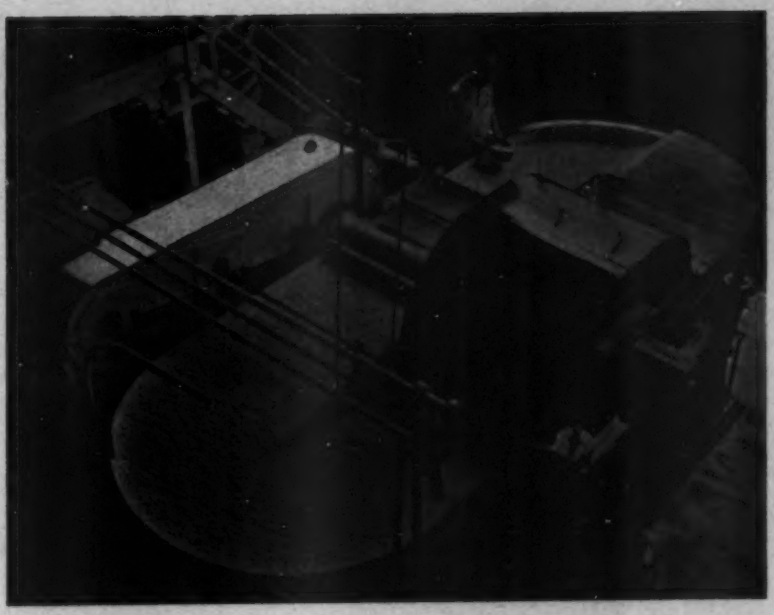
Fatal accidents numbered 5 in comparison with 7 in 1940, and non-fatal accidents numbered 928 in comparison with 830 in 1941.

In woods operations employment was 3.4 per cent above 1940 and 44 per cent above the average for the last ten years. Fatal accidents were 7 and non-fatal accidents 1,380 in 1941 in comparison with 2 fatal accidents and 1,439 non-fatal accidents in 1940.

Trophies were presented to the Thunder May Paper Company, Ltd., Port Arthur, which, among larger mills, had a severity rating of only 0.133 days lost per 1,000 man-working hours. The Pullan Paper Stock Company, Ltd., Toronto, was honored for having a perfect accident record in 1941.

◆

▸▸▸ ONE WORKMAN WAS FATALLY INJURED, windows were blown out, and other damage done when a furnace exploded at the Pejepscot Paper Company's mill in Brunswick, Maine, on March 7.



Consistency of the stuff in a beater runs about 6½%; it is reduced at the head box to around 1½%. In order to make one ton of paper 1900 pounds of water must be dispersed.

The removal of a large part of this water UNIFORMLY is the job of the felt. The correct design of felts for your specific requirements will ensure maximum production with optimum quality.

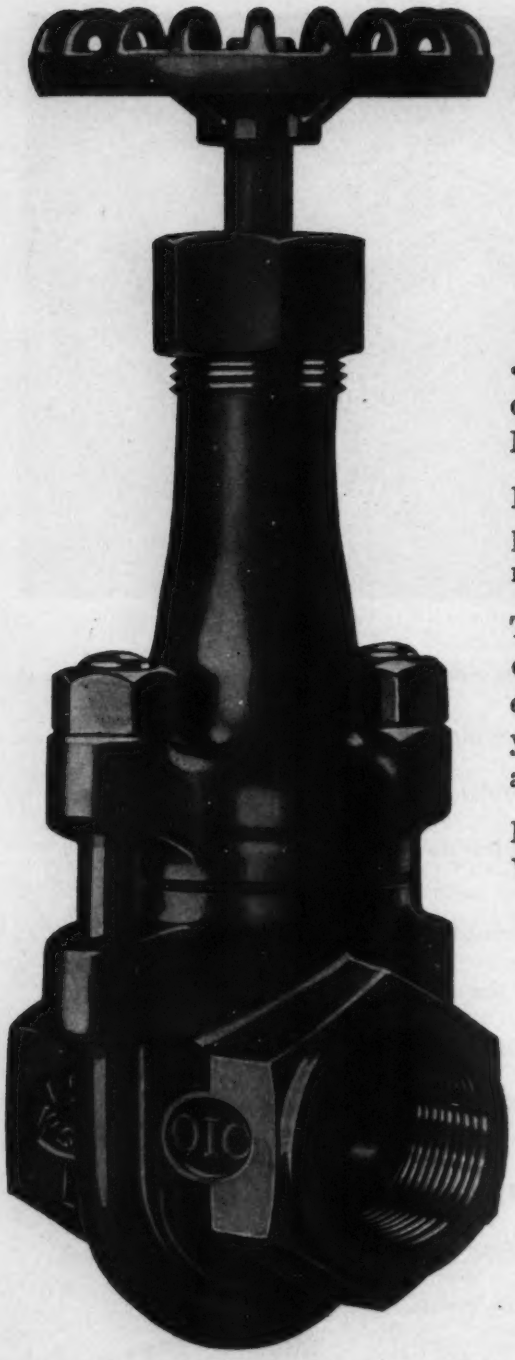
Draper Felts are meeting the most exacting conditions on all types of paper machines. A trial will convince you.

Draper Felts Favor Efficiency

DRAPER BROTHERS COMPANY

Woolen Manufacturers Since 1856 CANTON, MASS.

OUR REPRESENTATIVES to serve you
L. H. BREYFOGLE Kalamazoo, Mich.
W. L. CAMPBELL Savannah, Ga.
RALPH E. BRIGGS Canton, Mass.
C. K. BEECHER Delaware, Ohio
O. J. LELOFF Vancouver, Wash.



AN ANSWER

To M-9-c

DO YOU have the problem of finding suitable alternates for bronze valves, the production of which is limited by OPM "Conservation Order M-9-c"?*

If so, for many applications O.I.C. can solve your problem with the famous O.I.C. iron body, bronze mounted DUO-BOLT Gate Valve.

This great valve—the only DUO-BOLT Gate Valve on the market—now is available to you under properly rated defense orders, and in many applications you will find this sturdy, dependable O.I.C. Valve a superior alternate for restricted bronze valves.

Like all O.I.C. Valves, this great DUO-BOLT Gate Valve will insure you:

★ Longer Uninterrupted Service.

★ Lower Replacement Cost.

★ Lower Maintenance Cost.

★ Minimum Over-all Cost.

* OPM "Conservation Order M-9-c" restricts production of all bronze valves and prohibits production of bronze valves over 2-inches in size, except under Preference Rating Orders of A-2 or higher, or General Exceptions which are chiefly Army, Navy, Maritime, chemical and food applications.

ASK FOR FIGURE 333

OIC

THE OHIO INJECTOR COMPANY

WADSWORTH, OHIO

Quality Leaders in Valve Manufacture Since 1883

It's up to American Industry

From all over the world, frightened, helpless eyes peer through the mists of war toward American smokestacks. *Will children die of hunger? Will rifles in men's hands have bullets? Will the air above them swarm with friendly planes . . . or hostile?* It's up to American industry.

Because Koppers cuts across the whole American industrial scene like a common denominator, every new job for American industry puts fresh responsibilities on Koppers and some Koppers product.

Ships gliding down the ways with the hopes of civilization clinging about their bows, have been speeded into the service with bronze propellers from Koppers foundries. The plane soaring protectively above you probably has Koppers piston rings. The carriages of the anti-aircraft guns that rumble comfortingly past on their way to the coast were possibly built by Koppers.

Beneath all these, at the very roots of almost every one of the herculean tasks American industry is performing, is that great storehouse of energy—*coal.*

Koppers is mining vast quantities of coal for fuel. Koppers coke ovens are transforming much of that coal into coke, gas and the flood of other products which eventually mean munitions, drugs, plastics, synthetics, rubber and other indispensables.

With the lives of boys from your home and our homes at stake . . , and the hopes of engulfed nations in the balance . . . every word from an American factory becomes the world's greatest news story. It's up to American industry. Koppers Company, Pittsburgh, Pa.

KOPPERS

THE INDUSTRY THAT SERVES ALL INDUSTRY

BUY UNITED STATES DEFENSE BONDS AND STAMPS

WAR

PERKINS

Serving the PAPER INDUSTRY
surpassingly well since 1873

B. F. PERKINS & SON, INC.

ENGINEERS AND MANUFACTURERS

HOLYOKE • • • MASSACHUSETTS

IN THESE DAYS OF
24-Hour Operation

Get THESE DOZEN VALVE BENEFITS

24 hours daily

1. MAXIMUM CAPACITY WHEN NEEDED MOST
2. ACCURATE PRESSURE CONTROL UNDER TOUGHEST WORKING CONDITIONS
3. TROUBLE-FREE SERVICE
4. SMOOTH OPERATION
5. TIGHT CLOSURE
6. ACCURATE REGULATION
7. SPEEDIER PRODUCTION RESULTS
8. ELIMINATION OF FAILURES
9. CONSTANT DELIVERY PRESSURE
10. COST SAVING OPERATION
11. NO SPOILAGE
12. PRACTICALLY ZERO IN MAINTENANCE COSTS

You can find out full details on all of these 12 points by reading Bulletin "1000"—send for it.

CASH STANDARD *Streamlined* TYPE 1000 PRESSURE REDUCING VALVE

Whether you are operating one, two, or three shifts a day, the "1000" valve, through "Streamlined" performance, is a valuable factor in aiding in smooth operation, high production, and better quality results. Check the twelve points and you will see that you get every advantage in pressure reduction for steam, air, oil—most anything that flows. The "1000" valve stays on the job for years rendering remarkable service—all without giving trouble. The Streamlined flow around the inner valve eliminates turbulence, thereby giving you best control under varying loads. You get better pressure control and greater capacity because there's a straight path for the fluid through the flow tube.

HERE'S THE "1000" FLOW PATTERN
The Streamlined form of the inner valve eliminates turbulence. It produces the flow pattern shown at left which makes for maximum capacity when it is needed most and permits accurate pressure control under toughest working conditions.

A. W. CASH COMPANY
DECATUR, ILLINOIS

CASH STANDARD
CONTROLS.. VALVES

A CASH STANDARD "GET ACQUAINTED" COLUMN

Question: **"Don't you people make anything besides that Streamlined Valve you talk about so much?"**

Answer: **"Yes Sir; we do! And we propose to picture one or two of them here each time."**

In automatic liquid level control, two things are often of prime importance: (1) to hold the level within the closest kind of limits; (2) to do it dependably, day by day. How Cash Standard controls do both is shown above. A Type 100-L Controller operates a 12" Balanced Valve regulating liquid supply to a large tank. It is pilot actuated for sensitivity. It has operating power to spare—for any size Valve, however large.

Here, a Type 100-L Controller operates a 10" Cash Standard Balanced Valve. It regulates flow through a make-up line to a "dirty water" heater on the floor above. The lever of the "100-L" responds to slightest movement of a float in the heater—causing immediate movement of the power piston which operates the Valve. But there is no "hunting" because the Controller is fully compensated. It has a "range" adjustment too. It gets accurate results with any size valve—no matter how small or how large the valve may be. It is simply a matter of using the right size power cylinder.

Get Free Bulletins on Above . . . Write to
A. W. CASH COMPANY
DECATUR, ILL.

NAMES *in the* NEWS

Personals

ANDREW JACKSON RETIRES FROM AWP

Andrew Jackson, chief engineer of the American Writing Paper Corporation of Holyoke, Massachusetts, has resigned after 25 years of service with the company. While his plans are indefinite, Mr. Jackson expects to continue in the paper industry.

Familiarly known as "Andy," Mr. Jackson came to the AWP in 1917 as mechanical engineer, was made acting chief in 1925, and chief the following year. He continued in that capacity until a few months ago when he was given a special engineering assignment under Vice President Edwin C. Reid. At that time, Fernand H. Willemain, who was named assistant engineer in 1926, became chief engineer.

Mr. Jackson has, over a period of years, been responsible for many improvements at the Eagle-A. One of his extra-routine activities was the direction of the company's efficient preparations for reducing mill damage to a minimum during the succession of disastrous floods that have beset the Holyoke water front with its long string of AWP mills along the Connecticut River.

◆

▸▸▸ The board of directors of the Hilton-Davis Chemical Company, Cincinnati, Ohio, elected *Louis A. Hoffman* president and general manager of the company. Mr. Hoffman graduated from the school of chemistry of the University of Illinois, and has been associated with the company since its inception in 1922, first as a research chemist, and since 1936 as vice president.

◆

FRANKLIN E. PASCO ACCEPTS POSITION WITH SANDY HILL

On Monday, March 23, exactly 18 years from the day he started working at the Schroon River Pulp and Paper Company in Warrensburg, New York, the resignation of Franklin E. Pasco, superintendent of the company, became effective. He has accepted an executive position at the Sandy Hill Iron and Brass Works in Hudson Falls.

A graduate of Warrensburg High School and Albany Business College, Mr. Pasco served 18 months in the United States Navy during World War I. After the war he spent 8 years in New York City before becoming affiliated with the Schroon River Pulp and Paper Company, where he acted as bookkeeper until 1929, when he was appointed superintendent.

◆

▸▸▸ *Lieutenant-Colonel Clarke*, vice-president of the Anglo-Canadian Pulp & Paper Company, Quebec, and honorary lieutenant-colonel of the Royal Rifles of Canada, one of the units which composed the Hong Kong expedition, has been appointed special officer of the Department of National Defense to advise and assist regarding the interests of members of the Canadian Hong Kong force and their dependents and respecting any problems relating to Canadian prisoners of war.

◆

▸▸▸ *W. H. Palm*, sales manager of Brompton Pulp and Paper Company, Montreal, Quebec, has been appointed deputy administrator of wrapping paper in the Pulp and Paper Administration of Canada.

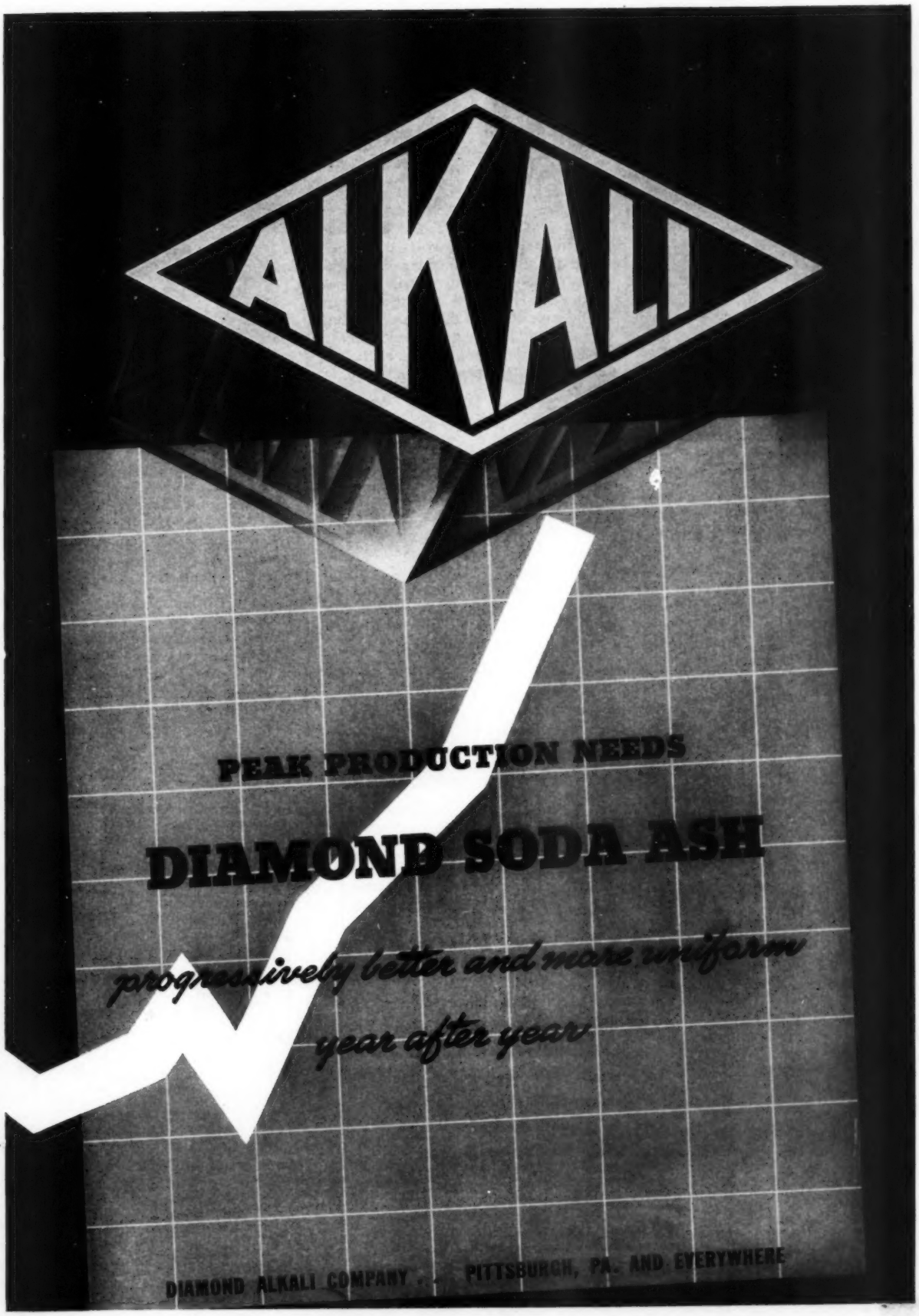
The oldest employee of Northern Paper Mills, Green Bay, Wis., was honored by officials and employees on March 23, when on that date, J. B. Macomber celebrated his 90th birthday. Mr. Macomber has been a watchman at the plant for 23 years. He is seen here (at right) cutting his birthday cake as A. B. Hanson, executive vice president and general manager; H. W. Sherman, general superintendent, and Harry Johnson, personnel manager, (L to R) look on.

G-E NAMES TWO NEW COMMERCIAL VICE PRESIDENTS

The election of T. F. Barton of New York, and W. B. Clayton of Dallas, Texas, as commercial vice presidents of the General Electric Company has been announced. Both have been district managers in their respective territories and will continue as such.

In 1906, the year he graduated from Clemson A. & M. College, Mr. Barton entered the employ of General Electric. He became district engineer of the New York territory in 1927, assistant manager of the district in 1939, and manager on January 1, 1941. He has twice won the Charles A. Coffin Foundation award, highest honor the company bestows upon its employees.

Mr. Clayton joined General Electric as a student engineer in 1905, at the age of 17, after graduating from the Alabama Polytechnic Institute. In 1924, when the Southwest district was organized with Dallas as headquarters, Mr. Clayton was named manager of the Central Station Department and assistant manager of the district. He became district manager in 1939.


ALKALI
PEAK PRODUCTION NEEDS
DIAMOND SODA ASH
progressively better and more uniform
year after year
DIAMOND ALKALI COMPANY . . PITTSBURGH, PA. AND EVERYWHERE

▶▶▶ Previously chief engineer for Frazier-Simplex, Inc., Washington, Pennsylvania, *R. W. Aiken* has been named plant engineer of the Jessop Steel Company of that city. Mr. Aiken

R. W. Aiken

received his B. S. degree at Pennsylvania State College, having completed his engineering course after service in the Army during World War I.

◆

▶▶▶ At the request of the Newsprint Association of Canada, arrangements have been made for *Charles Vining*, assistant to Chairman Donald Gordon of the Wartime Prices and Trade Board, to return temporarily to his former position as president of the Association in Montreal. Mr. Vining had been loaned to assist in expanding the organization of the Board last November, and the request for his return was in accordance with the understanding at that time.

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▶▶▶ On March 26, *F. Herbert Webster* rounded out 40 years of service with the Carew Manufacturing Company of South Hadley Falls, Massachusetts. His first years with the company were spent in the finishing room, then in 1902 he was transferred to the office, and in 1939, he was elected to his present position, that of assistant treasurer.

◆

▶▶▶ A testimonial dinner in celebration of the 80th birthday of *Horace A. Moses*, president of the Strathmore Paper Company, West Springfield, Massachusetts, was given by the members of the Writing Paper Manufacturers Association at the Waldorf-Astoria Hotel on March 25. March 27 marked the 50th anniversary of the founding of the original mill of the Strathmore Paper Company in West Springfield, Massachusetts.

▶▶▶ Promoted to the position of production superintendent of the Jessop Steel Company, Washington, Pennsylvania, *John Wilson* and his brother Harry, who is vice president

John Wilson

in charge of operations, represent the seventh generation of the Wilson family to serve this company and its predecessor, Wm. Jessop & Sons of Sheffield, England.

◆

▶▶▶ The Wartime Prices and Trade Board of Canada has announced the appointment of *Ivan Moffit*, partner in the Toronto firm of Hodder and Moffit and secretary of the Canadian Paper Trade Association, as deputy administrator of book and writing papers under A. P. Jewett in the pulp and paper administration.

◆

▶▶▶ *Edward P. White*, treasurer of the White & Wyckoff Manufacturing Company of Holyoke, Massachusetts, has joined the United States Naval Reserve as an ensign. A graduate of Yale University in 1931, he later went to the Harvard Business School and joined the firm in 1936. He succeeded his father, the late E. N. White, as treasurer of the company upon the latter's death in 1941.

◆

▶▶▶ President of Cornell Wood Products Company, Cornell, Wisconsin, and of the Hummell and Downing Company, Milwaukee, Wisconsin, *W. Irving Osborne, Jr.*, was elected new director of the Belden Manufacturing Company, Chicago. Mr. Osborne succeeds Newell B. Parsons.

◆

▶▶▶ *Albert H. Sampson*, director of sales promotion and advertising manager of the White & Wyckoff Manufacturing Company of Holyoke, Massachusetts, has been named assistant treasurer and office manager. He will

"SPEED SCREENING"
ACCOMPLISHED THROUGH USE OF OUR
FITCHBURG
New Type—Duplex Slot
SCREEN PLATES

Mills which use these special plates never go back to ordinary plates. Their production records would be impossible without the enormous extra capacity of these remarkable plates. Furnished in tough "Fitchburg Bronze," plain or chromium plated.

Fitchburg Screen Plate Co., Inc.
301 SOUTH ST., FITCHBURG, MASS.

also continue his previous duties. Mr. Sampson has been with the company since 1919.

◆

▶▶▶ Dean of the University of Wisconsin College of Agriculture, *Chris L. Christensen* was elected a director of the Celotex Corporation at a meeting of the board of directors. He succeeds L. R. Boulware, who has gone into Government war service at Washington.

◆

▶▶▶ *B. W. Clark,* vice president in charge of the Westinghouse Electric and Manufacturing Company's merchandising division, was appointed vice president in charge of sales of the company. He succeeds *Ralph Kelly,* who resigned to become executive vice president of the Baldwin Locomotive Works.

◆

LITTLE TO HEAD CANADIAN NATIONAL SELECTED SERVICE

Elliott M. Little, until recently head of Canada's Wartime Bureau of Technical Personnel at Ottawa, has been appointed to head the National Selected Service, the creation of which was announced by Prime Minister King before the Canadian Parliament on March 24.

At the outbreak of the last war, Mr. Little entered the employ of the Abitibi Power and Paper Company; however, his service there was interrupted when he joined the Air Force in 1918. After the war, he attended the University of Toronto, where he graduated with the degree of Bachelor of Applied Science in 1925. Following graduation he returned to Abitibi as plant engineer at Iroquois Falls, Ontario, and three years later was named assistant mill manager.

Mr. Little moved to the Province of Quebec in 1932, at which time he joined the Anglo-Canadian Pulp and Paper Mills at Quebec City. In 1933 he became general superintendent, and in 1937 became associated with the Gaspesia Sulphite Company, an affiliated organization. He was general manager of both companies at the time of his appointment as director of the Wartime Bureau of Technical Personnel.

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▶▶▶ The resignation of *Benton R. Cancell,* well known to the paper industry through his service on the staff of the American Paper and Pulp Association, became effective March 31. Mr. Cancell became assistant to *Oliver M. Porter,* executive director of the United States Pulp Producers Assn.

WIDE VARIETY OF TANKS AND STEEL PLATE WORK

Installed at a New Southern Pulp and Paper Mill

BELOW: One of the 24 ft. diam. by 30 ft. black liquor storage tanks at the new mill.

ABOVE: 100,000-gal. Horton elevated sprinkler tank and a 36 ft. diam. suction tank.

ABOVE: 7,500-gal. SO_2 storage tank built to par U-68 of ASME specifications. BELOW: 14 ft. diam. green liquor dissolving tank.

ANOTHER new pulp and paper mill has been added to the ever-increasing number of Southern industrial plants. Finished products from this mill will include bond, white book and wrapping paper. Pulp wood is obtained by selective cutting from 125,000 acres owned and forested scientifically by the company.

This new mill was designed by Hardy S. Ferguson, and built by the Rust Engineering Co. Twenty-eight field erected tanks and plate structures were fabricated in our shops for this installation, five of which are illustrated.

CHICAGO BRIDGE & IRON COMPANY

Cleveland.....2367 Guilehall Bldg.
Birmingham.....1511 North Fiftieth Street
Tulsa.....1651 Hunt Bldg.
Houston.....5443 Clinton Drive
Detroit.....1566 Lafayette Bldg.
Philadelphia....1653-1700 Walnut Street Bldg.
Washington.....632 Washington Bldg.
Chicago.....2445 McCormick Bldg.
New York.....3350-165 Broadway Bldg.
San Francisco.....1017 Rialto Bldg.

Plants at Birmingham, Chicago and Greenville, Pa.

Necrology

G. S. BRAZEAU

With the sudden passing of Guy S. Brazeau, the paper industry lost one of its most prominent younger men, and the Weyerhaeuser Timber Company suffered the loss of one of its most valuable executives.

Mr. Brazeau was manager of the Everett (Wash.) Pulp Division of the Weyerhaeuser Company. He passed away March 17 at his home on Lake Stevens near Everett, at the age of 44.

Mr. Brazeau was born in Wisconsin Rapids, Wisconsin. Born and raised in pulp and papermaking communities, he seemed destined to devote himself to a study of the industry. "Braz," as he was familiarly known to a wide circle of friends and acquaintances, interrupted his education at the University of Illinois to enlist in the Navy in World War I. After the war, he

Guy S. Brazeau

completed his college work and after graduation became associated with Nekoosa-Edwards Paper Co., Nekoosa, Wisconsin. From that connection he broadened his experience by turning to the field of papermaking machinery, and for several years he devoted himself to the selling of equipment for the Appleton Machine Company, Appleton, Wisconsin. His next connection was with the Northwest Paper Company, Cloquet, Minnesota.

In 1931, the Weyerhaeuser Timber Company entered the field of pulp manufacturing and about that time Mr. Brazeau was made district representative of the Pulp Division and placed in charge of the company's Chicago office. When the pulp mill at Everett was started in 1935, he was made manager and continued in that position until his passing. Mr. Brazeau was a member of the Technical Association of the Pulp and Paper Industry.

Services were held at Everett on March 18 and the family and a number of friends and company officials accompanied the deceased to Wisconsin Rapids where another service was held March 21.

Surviving are the widow, a son and a daughter. James Brazeau, the father, resides in Wisconsin Rapids, and a sister lives in New York City.

◆

V. HOWARD LARSEN

V. Howard Larsen, vice president in charge of sales of the Crystal Tissue Company, Middletown, Ohio, passed away April 2 at his home in Middletown. Although Mr. Larsen had been in ill health since last July, his passing was sudden; he had been planning to resume all of the duties connected with his work within a very short time.

For the past eleven years he had directed sales of the company, coming here from Indianapolis, where he was associated with the Crescent Paper Company for seventeen years. Mr. Larsen had been engaged in the industry many years, starting in a sales position with the Northern Paper Mills of Green Bay, Wisconsin, his birthplace and scene of his early business ventures.

Mr. Larsen is survived by his widow and a son.

◆

R. H. SPAULDING

A former governor of New Hampshire, Rolland H. Spaulding, of Rochester, New Hampshire, president of the Spaulding Fiber Company, vice president of the Spaulding-Frost Company of Fremont, and a director of Spaulding, Ltd., of London, England, passed away at the Frisbie Memorial Hospital on March 14.

Mr. Spaulding was born at Townsend Harbor, Massachusetts, on March 15, 1873, and attended grammar school there. He graduated from the Phillips-Andover Academy in 1893, after which he entered the fiber mill of his father, Jonas Spaulding, in order to learn the business.

Besides his activities in the fiber business, Mr. Spaulding was a director of the Atlas Leather Company and the International Leather Company, and held several responsible positions in organizations in Rochester. In January of this year the Frisbie Memorial Hospital, a gift of the Spaulding families to the City of Rochester, was dedicated.

Throughout his life Mr. Spaulding was active in public life and Republican politics, and in addition to serving his state as governor in 1915-16, he was delegate to the Republican National Convention in 1912, vice president of the New Hampshire Defense League in 1917, and vice chair-

Rolland H. Spaulding

man of the New Hampshire Committee of Safety during World War I. Several years ago he served as chairman of the committee of New England governors on railway service.

Surviving are his widow, two daughters, and a brother, Huntley N Spaulding, a former New Hampshire governor.

◆

▶▶▶ Former vice president and general manager of the American Tissue Mills of Holyoke, Massachusetts, *William H. Bond* passed away on March 24, in San Juan, Texas. He retired from the paper industry ten years ago and went to the Rio Grande region of Texas to engage in fruitgrowing. He was 75 years old.

◆

LLOYD B. EDGERTON

Associated with the Philadelphia Quartz Company, Philadelphia, Pennsylvania, since 1913, Lloyd B. Edgerton, vice president of that organization, passed away on March 15. He was 55 years of age.

Mr. Edgerton was born in Barnesville, Ohio. He attended the Ohio State University, obtaining his degree of Mechanical Engineer in 1909. He was employed in the Steam Turbine Testing and Service Department of the General Electric Company at

Schenectady, New York, until 1913, when he assumed charge of the Engineering Department of the Philadelphia Quartz Company. Mr. Edgerton was appointed works manager in 1930, director in 1934, and vice president in 1935. He was a member of the American Society of Mechanical Engineers and the Engineers Club of Philadelphia.

Surviving are his widow, two sons, and a daughter.

◆

▶▶▶ Pulp and paper specialist of the Dominion Rubber Company for the past five or six years, *Albert Ernest Miller* passed away at Dolbeau, Quebec, on March 5. Mr. Miller has been with the Dominion Rubber Company for the past twenty-five years, and was in the Lake St. John district for his firm at the time of his death.

◆

▶▶▶ Vice president of Ayers, Ltd., important manufacturers of paper machine clothing, *Ernest F. Ayers* passed away in his home at Lachute, Quebec. He was 64 years old.

◆

ARTHUR B. JOHNSON

For many years head of the Purchasing Department of the Pejepscot Paper Company, Arthur B. Johnson passed away at his home in Topsham, Maine, on March 17. He was 65 years of age.

Mr. Johnson was born in Queens, Long Island, New York, and was educated in the New York schools. He moved to Topsham in 1898. Besides his affiliation with the paper industry, Mr. Johnson was chairman of the Brunswick-Topsham Water District, president of the Brunswick Savings Institution, and active in civil, fraternal, and church affairs.

He is survived by his widow, four daughters, and one son.

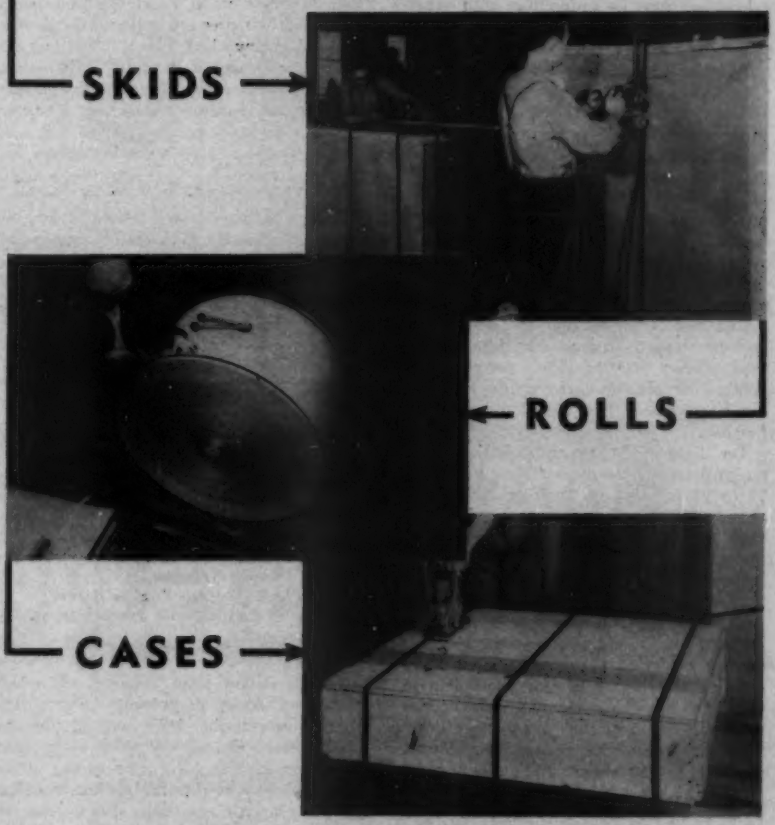
◆

▶▶▶ Former president of Firstbrook manager of the American Tissue Mills of Holyoke, Massachusetts, *William H. Bond* passed away on March 24, in San Juan, Texas. He retired from the paper industry ten years ago and went to the Rio Grande region of Texas to engage in fruitgrowing. He was 75 years old.

◆

▶▶▶ *Arthur Tremblay* of Jonquière, Quebec, was killed March 9 while chopping trees on the Price Brothers reserve, when he was struck by a falling tree. It was the first fatal accident of the cutting season on the reserve where more than 2,000 loggers are at work.

SAVE TONS OF PAPER WITH POUNDS OF STEEL



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Convention Papers . . . Abridged

The Function of a Yankee Dryer on a Paper Machine

KURT WANDEL, Consulting Engineer

The ordinary type of Yankee paper machine forms the basis for further development and use of the principles involved on a broader scale in connection with other paper machines and for a greater variety of paper (Figure 1). The Yankee dryer and rubber-covered pressure roll form a second press. The press differs from ordinary presses because the Yankee dryer, acting as an upper press roll, is heated and has a finished and polished surface to which the sheet will adhere securely in contrast to an ordinary upper press roll from which the sheet is taken off and which therefore cannot be heated. The heating of the sheet makes the fibers more pliable and permits them to be pressed closer together. With stronger fibers there is less hydrating required and the sheet will assume a more uniform strength in both directions. With weaker fibers, such as with a percentage of deinked or reused stock, greater strength can be obtained than would otherwise be possible.

On lightweight paper and tissue the moisture content of the web may vary from 72 to 76 per cent on entering the Yankee press. This percentage can be decreased from 6 to 8 per cent after passing through the press and have from 64 to 70 per cent moisture which amounts to removing about 20 per cent of the water in the sheet. There have been claims of removing over 40 per cent of the moisture after pressing on heavier grades of paper and with the web entering at a higher percentage of dryness.

While many Yankee machines operate with a pressure of 200 pounds per linear inch, the pressure has been raised on some machines to 350 pounds and attempts made at still higher pressures. The limitations in this respect lie in the endurance of the rubber covering and the strength of the Yankee dryer shell.

By calculation it has been established that the difference of expansion between the center of the shell and the ends less the expansion of the dryer shell due to 30 psi steam pressure causes the face of an ordinary 12-foot diameter Yankee dryer to be concave to the extent of 0.025 inch. This alone requires 0.050 inch crown in the pressure roll.

This condition has been overcome in an improved construction of Yankee dryer designed particularly to keep the level surface under operating conditions involving heavy pressure from a pressure roll. In this dryer roll, the steam is confined to an annular space between outer shell and an inner shell. The outer shell is constructed of steel which is two and one-half times as rigid as cast iron per inch thickness. These dryers may be operated with pressures of 500 pounds per linear inch with normal-pressure roll crowns.

A popular arrangement of presses on the Yankee dryer used widely in European mills has two pressure rolls mounted side by side as shown in Figure 2. The pick-up felt passes through both nips. A significant result of this arrangement is that while pressure roll *A* may not show any discharge of water at any time, pressure roll *B* will readily discharge free water on certain papers and speeds.

Remarkable results have been obtained with particularly strong, rubber-covered suction rolls mounted in a similar position as the regular pressure roll, shown in Figure 3. The advantage of the suction roll is particularly for high-speed operation and for the elimination of blowing—getting air between the sheet and the felt. Figure 3 shows a second plain pressure roll which completes the job of pressing the sheet uniformly against the dryer surface. In this arrangement the felt is taken away from the dryer so that a different section of the felt may now be pressing against the sheet to make up for any slight spot on the felt or the sheet. This helps perfect surfacing but slows production slightly.

Illustrations for this abridgment appear on page 76.

Fig. 1—Regular Yankee machine.
Fig. 2—Dual pressure rolls.
Fig. 3—Yankee machine with suction pressure roll.
Fig. 4—Double Yankee machine.
Fig. 5—Combination Yankee machine dryer section.
Fig. 6—Built-in Yankee dryer.
Fig. 7—Coating with Yankee dryer.

On the regular type Yankee machine the dryer is responsible for two outstanding results. One has been mentioned—the surfacing of the paper by being pressed against the highly finished and heated surface of the dryer. The other effect, which is the more important for application on regular paper machines, lies in the increased drying capacity per square foot of dryer surface.

A Yankee machine having a 12 foot diamter dryer will equal in drying capacity a regular dryer section of from 10 to 12 4-foot diameter dryers. Machine speeds vary from 250 to 500 fpm. The papers produced on these machines are wrapping, bag, waxing, manifold, creping stock, twisting, pattern, slip sheet, envelope and many others.

On a Yankee dryer, the sheet is completely exposed to the surrounding air, there being no dryer felts around the sheet and dryer ordinarily. This allows the dryer to be surrounded with ducts supplying hot air with force over every square foot of the surface of the sheet. Such ducts are shown in Figure 6. This flow of air, which incidentally should be hotter than applied on ordinary drier sections, assists evaporation from the side of the sheet from which it is most difficult to remove moisture. All vapor is swept away from the surface of the sheet. The proper application of hot air will carry its share of the drying capacity of any Yankee dryer to the extent of from 15 to 25 per cent.

The highly efficient drying period extends on a Yankee dryer only to about 40 per cent of its effective periphery starting from the pressure roll. After that, the paper side next to the dryer has lost considerable of its moisture content and can not any longer transmit heat to the other side effectively. It will actually become and act as an insulator, thus slowing down the balance of the drying. This has kept the single Yankee dryer machine from being used more widely on heavier papers. On absorbent type of papers such as toilet, the open structure of the sheet will allow all moisture to be driven out from one side without much resistance, although on such papers as well there are the two distinct areas of drying capacity.

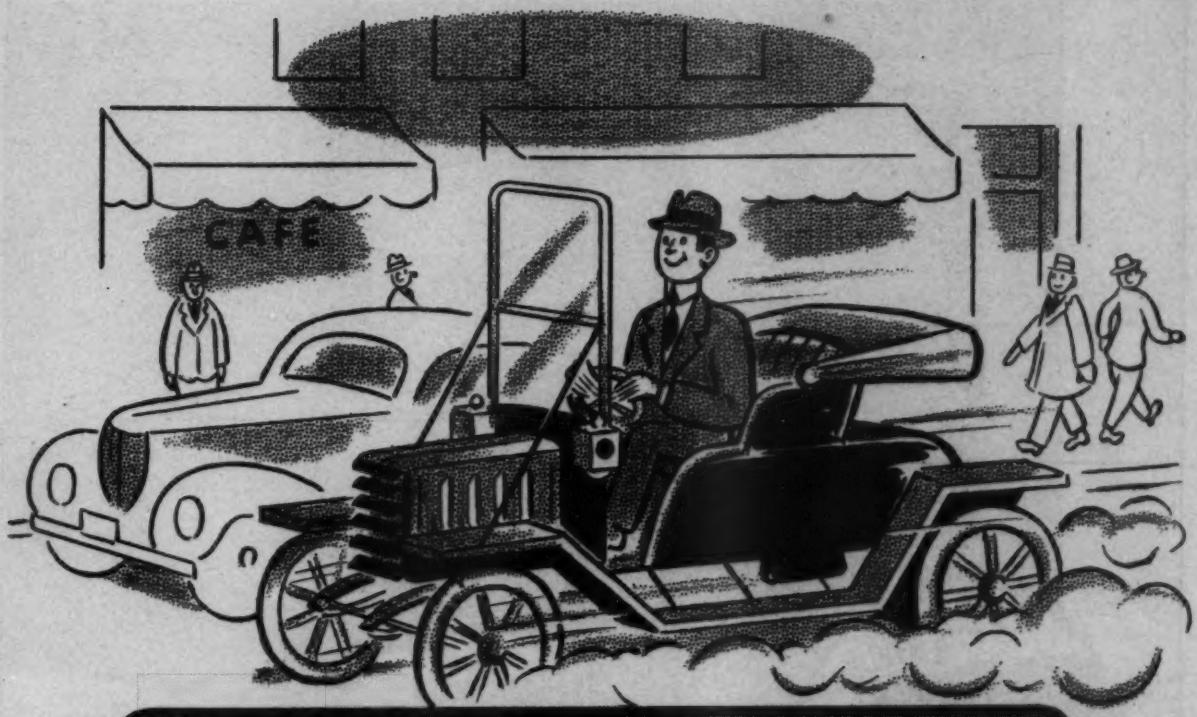
The obvious thing to do, to take full advantage of the drying capacity of a Yankee dryer, is to take the sheet away from the dryer after its initial and efficient drying cycle and put it in reverse onto another Yankee dryer, the same as it was put on the first dryer with a pressure roll. Thus we have the moist side of the sheet next to the heated surface against which the drying may be finished efficiently and assume the same finish as the side initially dried. This process is shown in Figure 4. The machine is called a double Yankee machine. One of these machines is operating in Canada and one in this country. The Canadian machine has made papers up to 80-pound basis while the American machine operates on lighter weights but at much higher speeds.

It has been found that the most efficient method of drying with the double Yankee is to take the sheet from the first dryer from 70 to 80 per cent dry and then finish the drying on the second dryer. This method, however, may not allow the finish on both sides of the paper to be exactly alike. For absolutely even finish, the sheet will have to be taken off the first dryer with a greater moisture content. This can be regulated through the steam pressure in the two dryers.

On the modified type of Yankee machine as shown in Figure 5 as many dryers as may be required according to speed of machine and grades of paper made are mounted

(Continued on page 78)

This is the second installment of abridgments of papers presented at the annual meeting of the **Technical Association of the Pulp and Paper Industry,** held in New York City, February 16-19, 1942. Monthly installments of these abridgments will appear in succeeding issues.



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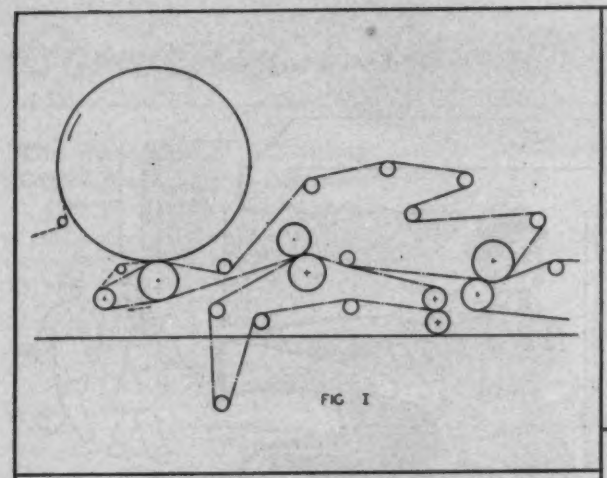

FIG. I

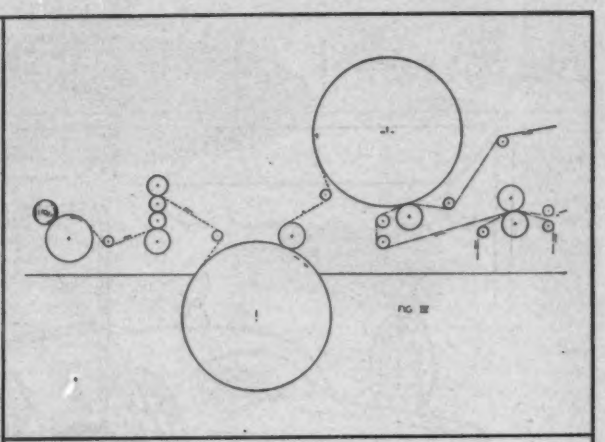

FIG. III

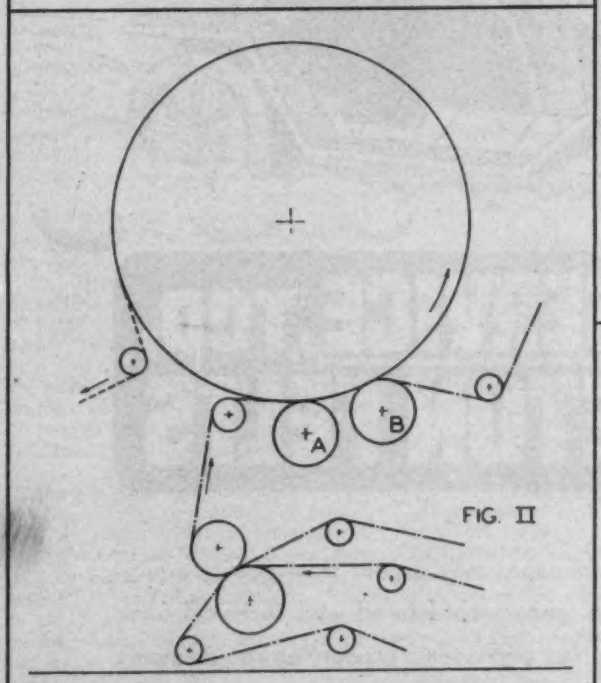

FIG. II

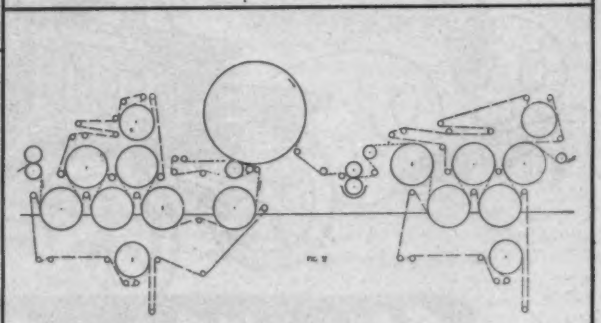

FIG. V

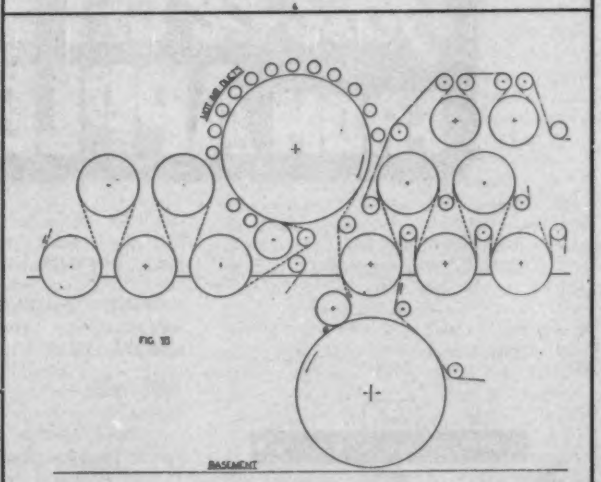

FIG. VI

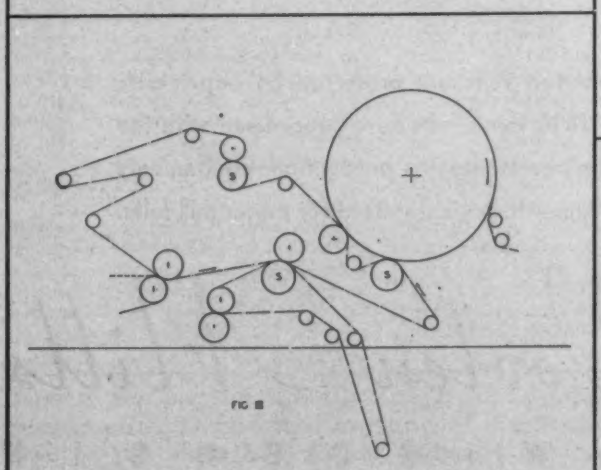

FIG. III

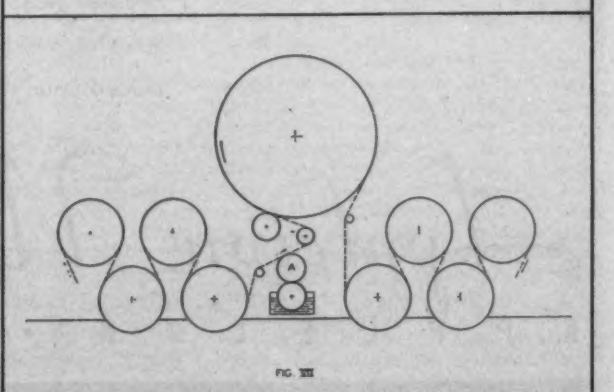

FIG. VII

Make This Simple Test

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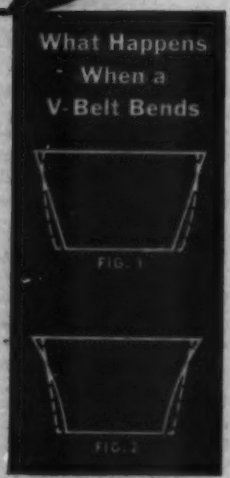
As a V-belt bends, you can actually feel its sides change shape! The top of the belt is under tension and grows narrower (see Figure 1, at right). The bottom is under pressure—therefore it widens. These stresses force a straight-sided V-belt to bulge in the sheave groove (Fig. 1), and this produces uneven wear on the belt sides, resulting in shorter life!

Now look at Figure 2. There you see how the concave side of the Gates Vulco Rope exactly corrects this bulging. It insures a perfect fit in the sheave groove with uniform side-wall wear and, therefore, longer life! It insures that the entire side-wall grips the pulley—heavier loads are carried without slippage—belts are saved and power consumption reduced.

Only belts built by Gates are built with the Concave side, which is a Gates patent.



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ahead of the Yankee dryer. The sheet is brought up to a temperature of about 190 Fahr. It is then pressed against the Yankee dryer with a pressure roll. A felt may be used on lighterweight papers while on paper board, for instance, no felt is required between pressure roll and dryer. The sheet is taken off before it is entirely dry, it is sized if so required and is then carried over a few more regular dryers to be finished. There are a few of these modified Yankee machines in operation. Some were rebuilt for a specific purpose and a few constructed new. On the machine as shown there are eleven 5-foot dryers, two 4-foot felt dryers and one 12-foot Yankee dryer. The machine is operating at speeds between 700 to 800 fpm mostly on waxing papers from 18 to 35 lb. basis. The machine has an average drying rate of about 2 lb. per sq. ft. per hr. The average drying rate for similar papers would probably be 1.2 lb.

On paperboard, bristols, card index, tag stock and many similar grades, one or two Yankee dryers built in the dryer section, as shown on Figure 6, will not only increase drying capacity but will close up either one or both sides of the sheet under the heat and pressure to which they are subjected to, with the result that a finish is obtained without loss of caliper and with full retention of the flexibility and bending qualities of the stock. Such Yankee dryers are in operation in many European mills making the finest grades of board and heavy specialties. In this country, we have only smoothing rolls and calenders which are doing overtime work.

Figure 7 shows an arrangement for sizing or coating paper or board in connection with a Yankee dryer. Any suitable emulsion containing colloids, coloring, sizing, or other filler compounds are applied by the roll *A* and impressed on the surface of the sheet by the pressure roll and subsequently dried around the Yankee dryer. The dryer in such a position may be chromium plated for the highest finish.

The natural affinity of a wet sheet of paper for a heated and polished metal surface is utilized for creping on a Yankee dryer. Most toilet paper, all paper towelling, napkin paper, facial tissue, and cellulose wadding are creped on the paper machine. These papers used to be creped in their wet state either on the last press or on a creping drum ahead of all drying. The fact that paper machines on wadding are operated at 2000 fpm and on facial tissue, which is run over the machine before creping on a 7 pound basis at 1400 fpm both on a single Yankee dryer proves the possibilities of the Yankee principle. Toilet, napkin, and towelling are not completley dried before being creped off as these papers must retain a certain amount of rigidity. The paper is taken off instead at between 70 to 80 per cent dry after which the completion of the drying can be accomplished with a few regular dryers or preferably a second Yankee dryer.

Newsprint, book, and other flat printing papers may be made on modified Yankee machines. The advantage of such machines would lie in their simplicity and ease of high-speed operation on the one hand and with a definite improvement of product as far as printing surface is concerned on the other.

Plans have been made for the construction of machines for newsprint with Yankee dryers of which there would be four to five required for each machine. The problems involved could best be worked out in revamping machines with old drier sections into which two Yankee dryers would be worked in.

Yankee dryers may work well under any ordinary conditions suitable for papermaking. The use of soft water will help a great deal to retain the finish on the dryer without undue doctoring. Sizing of the paper has to be done carefully, the size must be precipitated well. A furnish containing old papers always works well on account of the absence of free pitch and the presence of small filler fibers. Other considerations must be left to the papermaker more than to the machine builder.

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good-lighting, are essential to a complete safety program.

Extensive research has indicated that seeing can be accomplished more easily, quickly, accurately, and comfortably as illumination is increased to levels well above 100 footcandles. Present-day recommendations, thereof, are admittedly a compromise between what is most desirable and practical considerations such as cost and the present limitations of illuminating engineering.

It is commonplace knowledge that some objects are harder to see than others, therefore, more light should be provided for the more difficult seeing tasks. There has recently become available an instrument which for the first time evaluates the relative ease of seeing objects which vary in size, shape, detail, etc. The Luckiesh-Moss visibility meter (Luckiesh, M., and Moss, F. K., "Visibility—Its Measurement and Significance in Seeing," *J. Franklin Institute*, 220, 1935) integrates the complex factors concerned in visibility so the relative difficulty of seeing them can be accurately measured. This in turn can be expressed in the number of footcandles necessary to illuminate a given object to provide any desired standard of ease of seeing. In addition to indicating the footcandles necessary, it aids the lighting specialist to determine the quantitative value of the various factors which determine the quality of lighting. With this instrument it is thus possible to determine such factors as the direction of the light and the degree of diffusion for maximum visibility of a given object.

Light, in common with many other psychological factors, does not affect seeing in an arithmetic progression. In order to obtain equal and significant improvements in seeing, it is necessary to increase light

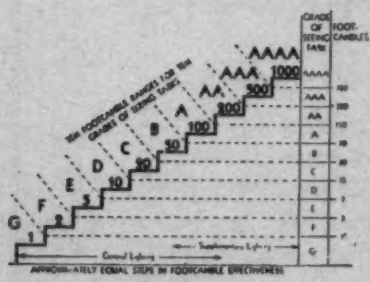
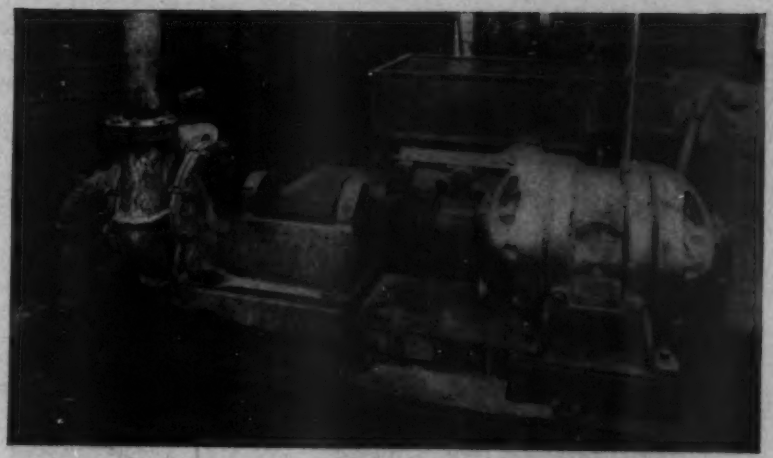


Figure 1

in logarithmic proportion. Thus for increasingly difficult visual tasks footcandle recommendations are divided into ranges which increase in approximately logarithmic proportions, as shown in Figure 1 (Sturrock, Walter, "Recommended Levels of Illumination," *The Magazine of Light*, No. 6, 1941).

Many locations require light primarily for safety and convenience. The visual tasks encountered are intermittent and not severe. The following areas and types of operation fall in this classification: digesters, pulp grinding rooms, sulphur rooms, acid towers, settling tanks, knotters, riffler beds, screening, deckers, beaters, and the greater part of the area housing the paper machines.

It is suggested that the interior of the



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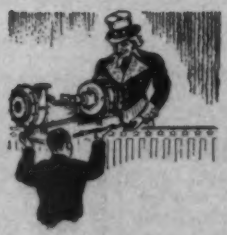

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settling tanks be illuminated somewhat better than is customary. As a power-conservation measure, this equipment could be controlled by switches in the doors of the tanks so that when the doors are shut there will be no waste of energy.

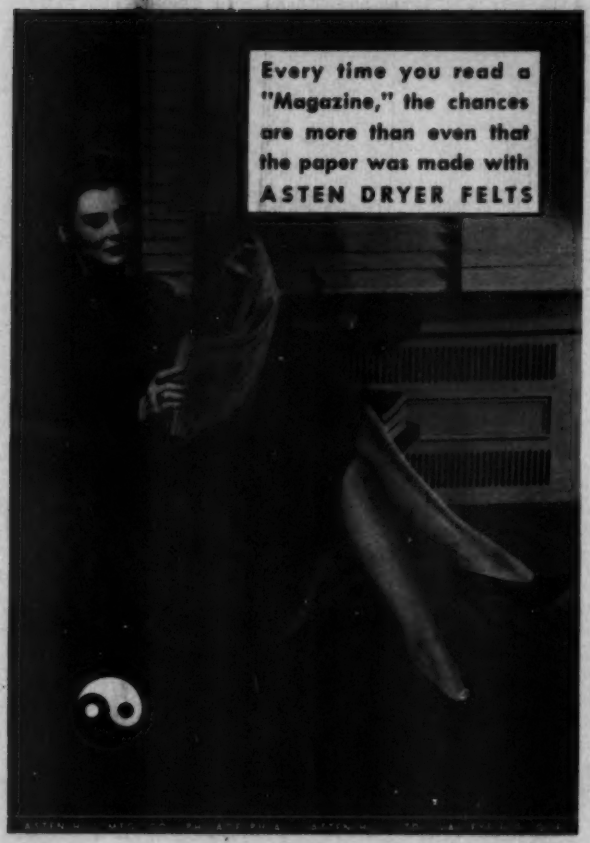
In the wood room it is suggested that in the areas where knots are being removed either by machine or by hand axe, approximately 20 footcandles be supplied. This is a relatively dangerous task and one in which carelessness is difficult to overcome. Here again, good lighting will aid the individual workman to instinctively avoid a dangerous situation.

Around the bleachers it is recommended that light of a daylight quality be installed to aid in checking the degree of bleach during the process.

At the wet end of the paper machine, seeing tasks are of sufficient frequency and severity to require approximately 30 footcandles of illumination. This is often applied from one side of the machine so that the workman standing on the opposite side sees images of the light source from the stock on the fourdrinier screen. Where this lighting method is used, an indirect system is of greatest benefit. In other words, a wall or screen is utilized, and the light first

TABLE I—Recommended Illumination for Various Tasks

	Foot candles Modern Practice	Grade of Illumination
Acid Towers	10	D
Beaters	10	D
Blacksmith Shop	10	D
Bleachers	20	C
Carpenter Shop	20	C
Chip Storage	5	E
Deckers	10	D
Digester House	10	D
Finishing Room—General Paper Cutters, Layboys and Trimmers	20	C
Hand Counting	30	C+
Inspection	50	B
Knotters	10	D
Laboratory	50	B
Lappers, Thune Press	20	C
Machine Shop and Maintenance Dept.		
Repair Shops—		
Rough Bench and Machine Work	20	C
Medium Bench and Machine Work	30	C+
Fine Work—Buffing, Polishing, etc.	100	A
Extra Fine Work	200	AA
Offices—		
Bookkeeping, typing and accounting	50	B
Business machines, local illumination	100	A
Conference room, general meetings	30	C+
Office activities (see desk work)		
Corridors and stairways	5	E
Desk Work:		
Intermittent reading and writing	30	C+
Prolonged, close work, computing, studying, designing, reading blueprints and plans	50	B
Drafting:		
Prolonged, close work—art, drafting, and designing in detail	50	B
Filing and Index References	30	C+
Lobby	20	C
Mail sorting	30	C+
Reception rooms	20	C
Stenographic work:		
Prolonged reading shorthand notes	50	B
Packing	20	C
Paper Machine:		
Wet End	30	C+
Drying Cylinders	10	D
Calendering	10	D
Reel	50	B
Power Plants, Engine Rooms, Boilers:		
Boilers, Coal and Ash Handling, Storage Battery Rooms	5	E
Auxiliary Equipment, Oil Switches, Transformers, Engines, Generators, Blowers, Compressors	20	C
Control Room—		
Switchboards and Meters	30	C+
Rewinder	100	A
Settling Tank House—Interior of Tank	10	D
Shipping Platform	5	E
Soda Room	10	D
Sulphur Room	10	D
Wood Room:		
Chipping	20	C
Pulp Grinding	10	D
Yard Lighting:		
Loading	2	F
Protective	1	G
Parking Lot	1	G



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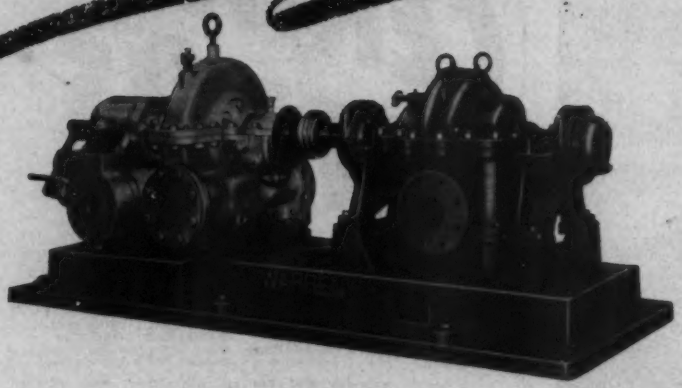

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directed upon that surface, from which it is reflected to the machine. A soft and comfortable quality of lighting is obtained in this way. This type of lighting also can be used to good effect throughout the portion of the machine where drying cylinders are located. Here, seeing tasks are more casual and lower illumination can be used successfully.

At the reeling end of the machine a dual lighting system is proposed. At the time a new reel is started the action requires highly-skilled, carefully-coordinated movements on the part of the workmen. This will be facilitated by good illumination at the time the reel is started. It is recommended that approximately 50 footcandles be proved by supplementary lighting units placed above the reel. However, while the paper is being reeled, a check is often desired for uniformity of thickness, streaking, and other similar defects which may develop. Such defects are seen most easily by transmitted light. This can be provided by a bank of lamps placed under the paper which transmits a certain portion of the light and instantly shows up many of the defects mentioned above. In order to see these defects, very little light should be thrown on the top surface of the paper so that the supplementary lighting used when starting the reels should be off while the paper is being inspected. Similarly, the lighting units under the paper should be turned off when the reel is being started as these constitute a severe glare source due to their position below the eye level of the workmen. The two groups of lighting units could be controlled from a single double-throw, double-pole switch.

The rewinder is a relatively hazardous location, and it is recommended that good illumination be provided at this point to minimize the possibility of accidents.

Similarly, cutting, trimming, and packing are semi-skilled or skilled operations which require continuous and moderately severe visual effort. For these operations approximately 20 footcandles is recommended.

Hand counting seems practically auto matic, and yet it again calls for extreme coordination between the eyes and the hand. Anyone who has watched a new operator at this test will realize the high degree of skill required. Here, approximately 30 footcandles is recommended.

Where inspection is combined with hand counting, even higher illumination is recommended; where it is a separate operation the higher illumination also is necessary. Here, not only should the illumination be relatively great, but it will be found that a higher visibility of defects is obtained by the use of directional light sources. Here, three quarters or more of the light should be coming from one side of the operator. This minimizes the sheen which is present even in relatively matte papers and permits fuzzing and other surface blemishes to be readily seen.

All outdoor areas used in any way at night should be proved with a relatively low illumination for safety and protective purposes. Today, light is being used with extreme effectiveness to guard against sabotage. In addition, areas where loading or shipping may be conducted at night should be provided with artificial light. It has been found desirable to floodlight parking lots to minimize danger from intruders or theft.

Offices and laboratories are rightly considered of extreme importance as nerve centers for the entire plant operation. Here, quality factors such as a minimization of direct and reflected glare, harsh shadows, and a lack of uniformity in illumination must be carefully avoided.

The quality of lighting is concerned with the distribution of brightness in the field of vision.

It is usually desirable to have relatively uniform general illumination throughout any particular work area since eye strain generally results where lighting is very uneven, with extreme contrast between bright and dim areas.

Harsh, dark shadows should be eliminated. They constitute an accident hazard because they may obscure objects that should be seen. Shadows slow up production and are likely to cause errors in operation. Shadowy interiors hide dust and dirt, thereby affecting plant maintenance. Shadows can be avoided by a consideration of the same factors that eliminate poor distribution.

Direct glare from a light source is common and definitely reduces visibility and increases eye strain. Tests have indicated that a glaring light source which produces only 5 footcandles of illumination at the eye may reduce the effective lighting as much as 40 per cent even though it may be 40 degrees above the line of vision.

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Reflected glare is often more objectionable than direct glare and quite frequently is more harmful because it is generally found below the horizontal, a zone in which the eye has no natural protection.

Lamps (Mazda Lamps, LD-1, Nela Park Engineering Department, General Electric Company, Cleveland, Ohio) employing three radically different methods of producing light are commonly used in the industrial field. In the order of their development these are: the tungsten filament lamp, the mercury lamp and the fluorescent lamp.

Because of the wide differences in first cost and operating cost between these various light sources, there is considerable misunderstanding as to their comparative cost. In general, filament lamps have a lower first cost because of the simplicity of the installation and higher operating cost because of their lower efficiency. Mercury and fluorescent lamps have a higher first cost, and usually a lower operating cost because of their higher efficiency. Which is the most economical depends to a large extent upon current cost (the main item in operating cost), and also the number of hours service per year. Thus where a lighting installation is to be used a great number of hours per year, a low operating cost is a desirable feature. Conversely, where equipment is used only intermittently and may average only a few hundred or a thousand hours a year, operating cost is a lesser factor and first cost is a lesser factor and first cost is a primary consideration.

Of greater importance than a simple cost comparison are the considerations of the quality of lighting and quantity of light that are obtainable from various systems. Where these factors are equal, the decision can be based upon cost alone; otherwise the difference in cost should be weighed against the quality factors involved.

The selection of the proper type of reflecting and diffusing equipment is more important today than ever before.

There are several fundamentals of performance usually considered by the engineer in the choice of types of units: (a) desirable distribution of light and suitability for the particular interior involved; (b) efficiency of light output; (c) inherent maintenance of initial efficiency and ease of periodic cleaning and lamp replacement; (d) adaptability to greater output through the use of larger lamps, or more lamps should higher illumination be required in the future; (e) sturdiness of construction and (f) cost.

In recent years specular Alzak aluminum has been widely used both for supplementary lighting units and for high-bay general lighting equipment. Under the present emergency this material is no longer available for lighting equipment. However, one substitute is available in the form of a specular finished plastic of high efficiency. This material seems particularly applicable to fluorescent supplementary lighting where temperatures are well within permissible limits for the material.

One important problem in papermaking is color matching. For this work it is necessary not only to provide the proper color quality of light but also to reduce to a minimum the glossy or specular reflection from the surface of the paper or wet pulp. This reflection overlays the true color of the surface and makes color matching extremely difficult. While this is an involved subject and worthy of much greater discussion, it may be said that the daylight fluorescent lamp is being used widely at the present time as a light source and that special booths have been designed which reduce to a minimum the annoying gloss reflection that upsets the color matcher's judgment.

The quality of lighting necessary in an office is somewhat more advanced than in the normal factory areas. This is true because of the prolonged and exacting visual tasks that are usually encountered. For fluorescent lighting, because of the relatively low brightness of the source, direct-indirect louvered reflectors are being used very generally. In other cases direct lighting equipment louvered and recessed into the ceiling is used. A common characteristic of all of these reflectors is greater protection from seeing a direct view of the lamps than is generally afforded with industrial lighting equipment. Where filament lighting is used, indirect and luminous-bowl indirect fixtures are generally recommended for offices and drafting rooms.

It has often been said that the best lighting engineer is the man with soap and water. What is meant by this phrase is that a thorough cleaning will usually increase the illumination more than the difference between well and poorly designed equipment. The best installation in the world rapidly loses its effectiveness unless frequently and thoroughly cleaned (Gaetjens, A. K., "It Pays to Keep Clean," THE PAPER INDUSTRY AND PAPER WORLD, May, 1940).

In some cases soap and water have been found undesirable because of the possibility of splashing it upon machinery or products below. This difficulty can be eliminated by the use of cleaning agents that contain wetting compounds. With these materials relatively little liquid is used, and the possibility of splashing is reduced to a minimum.

Where Alzak aluminum is to be cleaned, special compounds are available which contain wax or wax emulsions that not only clean the equipment but leave a thin wax film that protects it for a longer period.

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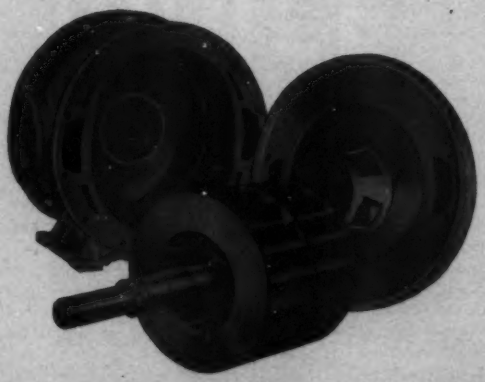

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process mills, is the possibility of corrosion of the lighting equipment. This has been minimized in some installations by the smearing of a thin grease over the portions of the equipment that are most likely to be attacked, such as the edges, beads, or other similar portions of reflecting and wiring equipment.

The Physical Basis of Standardization of Brightness Measurement

J. A. VAN DEN AKKER,[1] PHILIP NOLAN,[2] and WILLMER A. WINK[3]

A carefully developed system for calibration and standardization of reflection meters for the measurement of brightness has been in widespread use in the pulp, paper, and paperboard industry here, and abroad, for the past seven years. However, the need for still wider use of this measurement has become evident, and hence the desirability for the creation of a TAPPI method (TAPPI Suggested Method T 452 sm-41, *Paper Trade J.* 113, No. 26:39-42, Dec. 25, 1941).

An exact definition of brightness involves a number of carefully specified values, and, hence, cannot be given in a few words. The new TAPPI method (TAPPI Suggested Method T 452 sm-41, *Paper Trade J.* 113, No. 26:39-42, Dec. 25, 1941) presents a virtually complete definition of the quantity, which, if carefully followed, could result in an instrument agreeing generally with currently standardized instruments to within approximately 0.5 per cent. However, deviations within 0.5 per cent are the result of small uncertainties in all characteristics, and are of an accidental nature. In spite of this, the use of a master instrument and a very carefully operated calibration system have enabled the operators of nearly one hundred reflection meters to maintain their instruments on a common scale to within about 0.3 per cent. If it were intended that brightness should be a purely colorimetric quantity, the generally attained precision of 0.3 per cent might appear ludicrous. Brightness, however, is a technical rather than a colorimetric quantity, and many problems relating to economic structure as well as to technical matters have very definitely proved the desirability of maintaining a precision of the order of 0.3 per cent. It is largely for this reason that the new TAPPI method required incorporation of a "master instrument" and system of calibration used therewith.

The spectral factors influencing reflectance are those relating to the spectral composition of the light and to the spectral characteristics of the photoelectric cell. In view of their importance to accuracy of measurement, the spectral characteristics have been very carefully specified in the new TAPPI method. These characteristics may be enumerated as follows:

1) The variation with wavelength of the radiant power, per unit wavelength range, emitted by the lamp.

2) The variation with wavelength of the transmission of optical filters.

3) The variation with wavelength of the transmission of the glass lenses and other glass optics.

4) The variation with wavelength of the sensitivity of the photoelectric cell (often referred to as "spectral response").

5) The nature of items 2 and 3, in consideration of item 4, between the light source and the test specimen, and between the test specimen and the photoelectric cell.

These instrumental characteristics together with the spectral reflectivity of the test sample[4] will have important influence on the numerical value of the brightness.

On studying the relationship between the relative spectral sensitivities of a large number of phototubes and the spectral deviations observed in a reflection meter, it was found that only a poor correlation existed between spectral deviation in an actual instrument and relative spectral sensitivity as determined by the special means involving a mono-chromatic illuminator and vacuum tube electrometer.

A group of differently designed reflection meters having the same effective wavelength but appreciable different filter characteristics would give data showing spectral deviations. This is due to the fact that spectral reflectance and transmission curves usually have fairly substantial curvature in the wavelength range of interest —where the curvature is negligible, discrepancies between the various instruments would not have a spectral component, but such spectral component would be appreciable for many of the pulps and white and near-white papers in existence. The theory of the discrepancy due to curvature of the spectral reflectance curve is discussed in the paper by Davis (Davis, M. N., Paper presented before TAPPI, Feb. 16-19, 1942).

Two instruments might be identical with regard to all spectral factors, and possess

(1) Research Associate, The Institute of Paper Chemistry. (2) Research Associate, The Institute of Paper Chemistry. (3) Technical Associate, The Institute of Paper Chemistry.

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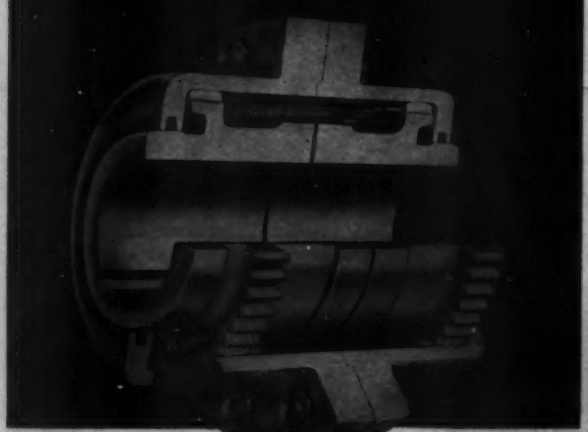

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Left, below: Another Fig. 3105 6" Goulds unit handling 3.6% unbleached sulphite stock to beater. Replaces old 12" unit at right, above, saving another 25 H. P.

Not shown: A Fig. 3105, 8" pump handling 0.6% ground wood and sulphite stock to paper machine screen head box replaced an old 8" unit at a 30 H. P. saving.

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2472

equally accurate photometrical systems, yet give badly divergent data on reflectance. Such divergence would be due to dissimilar manner of illuminating and viewing of the test specimen and standard of reflectance.

Frequent experience in the adjustment of new instruments has demonstrated that close adherence to the specified angles of incidence and reflection is necessary. Hence, the specification of these angles in the suggested method calls for a tolerance of one degree.

An important phenomenon relating to the geometry of an instrument is due to the translucence of the material of either a standard or test specimen.

The effect becomes larger as the size of the aperture is made smaller, being quite noticeable to the unaided eye in the case of extremely translucent materials when the aperture is of the order of 1 mm. in diameter. Where pot opal glass, an extremely translucent material, is involved, this geometrical effect will account for a total variation of the order of 2 per cent when the instrumental aperture is 0.5 inch. In this case the variation is caused by so-called focusing adjustments, in which the image of the lamp filament is made sharp or diffuse, and moved about in a systematic manner in the aperture (as seen by means of ground colored glass). Certain papers, and pulps of high brightness, are sufficiently translucent to make it definitely worth-while to include the possibility of standardization procedures, instead of replacing them with more opaque standards.

Apparently the only universally satisfactory definition of reflectance would be one which included provision for uniform illumination over a large area, and acceptance of rays for measurement from a relatively small area centrally located in the large area, or provided for the opposite arrangement, in which a small area is illuminated and a large area viewed. Until special measurements are made in accordance with this statement, there can be no exact and fundamental meaning to reflectance of a translucent material. In the meantime, the existing system of standardization insures that agreement between different laboratories may be obtained on the brightness of translucent materials as well as the more ordinary papers, for which the effect is not of importance.

The definition of brightness would not be complete without the statement that the ultimate standard of reflectance is a properly prepared surface of magnesium oxide (National Bureau of Standards, Letter Circular LC547, "Preparation and Colorimetric Properties of a Magnesium Oxide Reflectance Standard").

Although the preparation of the ultimate standard is not an "art," an uncommon amount of care and awareness of possible sources of error must be exercised in the work. It is probable that in many laboratories this important aspect of the standardization work could not be carried out with adequate accuracy, and that in the absence of a regular source of working standards typical discrepancies would be of the order of 2 per cent. It was because of the general desire to retain the present system of standardization and calibration —and condition of general agreement between the many reflection meters in use— that a detailed description of a calibrating and standardizing system, including a master instrument, was included in the new TAPPI method.

The Advantages of Sulphonated Tall Oil in Manufacturing Coated Paper

EDMUND GETTY
Asst. Superintendent Coating Mill
West Virginia Pulp and Paper Company

The evaluation of plasticizers, eveners, defoamers, etc., in paper coatings has usually been a matter of selecting those that help produce a good, smooth coating application, free from brush marks, pin holes, and other defects.

Both sulphonated castor oil and pine if used in excess, can, in some instances, impart undesirable characteristics to the finished product. Sulphonated castor oil, because of an uneven penetration, is objectionable in a coated paper, because it causes a mottled appearance in the finished paper and greatly reduces the desired printability or varnishability of the finished paper.

Sulphonated tall oil (a refined tall oil, *Indusoil,* produced by the West Virginia Pulp and Paper Company) gave excellent results in mill practice and it seemed to be preferable in the finished paper to sulphonated castor oil or pine oil.

When desired, sulphonated tall oil can be used just as sulphonated castor oil along with pine oil, but the objections already mentioned for sulphonated castor oil and pine oil are not in evidence.

Laboratory tests were made using large quantities of each of the oils in casein solutions. The tests show no appreciable difference for casein coatings when cut either with ammonia or soda ash when no oil was used, and only a slight advantage for soda ash-cut casein when pine oil was used. When compared with sheets coated with casein only, the sulphonated castor oil-casein emulsion coated sheets show a decrease in gloss, brightness, and tear, and an improvement in folding endurance and bursting strength. These results were obtained using both ammonia and soda ash-cut casein.

The test sheets coated with sulphonated tall oil-casein emulsion showed a considerable difference in the test results, when the casein cut with ammonia is compared with the casein cut with soda ash. Sheets coated with sulphonated tall oil in ammonia-cut casein show a definite improvement in gloss and bursting strength, some improvement in folding endurance, and a loss in brightness when compared with the results on sheets coated with casein only.

The unusual quality found with the soda ash-cut casein-sulphonated tall oil test sheets is that they show very little difference in folding endurance at 50 per cent relative humidity, as compared with 10 per cent relative humidity. This is a definite advantage, as poor folding under dry conditions is a source of many complaints on coated papers, especially during the winter months.

Sulphonated tall oil has, from mill observations, certain advantages over sulphonated castor oil when used in relatively small quantities; such as better brushing and a more desirable surface appearance. Its greatest advantage is that it can be used in large quantities to obtain other desired results when sufficient quantities of other oils to obtain such results would, in many instances, ruin the finished product.

Since the oil content of the coatings used in these tests is large, the results obtained are somewhat questionable. However, this appeared to be one approach for evaluating these oils, and the results do show the type of film to expect in mill practice.

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The next step was to compare casein with each of the casein-oil emulsions in clay coatings.

The best brushing coating was obtained using casein and pine oil. Sulphonated tall oil-casein was second best, while sulphonated castor oil-casein and casein alone were third and fourth best, respectively.

Mill tests with starch as the adhesive and also experimental mill runs with zein as the adhesive, have given more satisfactory results when using sulphonated tall oil than any other similar material.

It must be remembered that a good coating application is usually the principal objective when using such materials as those tested. The quantities used are usually small compared with the quantities we have used in these tests, but in this case we considered it essential to work with large quantities to show any definite characteristics and to prevent giving any results that would be within the limits of experimental error.

While work on sulphonated tall oil in coated papers is really only started, it apparently has certain advantages from mill observation over sulphonated castor oil and pine oil when used in relatively small quantities, and its greatest advantage would seem to be that it can be used in large quantities for some desired results where sufficient quantities of these other oils to obtain such results would, in many instances, definitely ruin the finished product. Since sulphonated tall oil is also much less expensive than sulphonated castor oil, it may be used more freely.

Development of Naval Stores and Pulpwood Supplies from the Pinus Mercusi of Northern Sumatra

D. G. MOON
J. E. Sirrine & Company, Engineers

In the colonization of the Netherlands East Indies, the Dutch have shown a remarkable aptitude for modernization and development of natural resources under a social scheme that is almost idealistic.

Among the new projects is the rapid development of a source of gum rosin turpentine and pulpwood in northern Sumatra by a carefully controlled second growth crop of the fast growing *Pinus Mercusi* which are indigenous to the volcanic mountain slopes at elevations from 1500 to 7000 feet above sea level and almost on the equator.

In 1924, the Government decided to make experiments in regard to promoting the growth of these pines for turpentining and placed the control under the government Plantations Department, rather than the Forest Service, in view of the fact that the former had done somewhat similar work in the tapping and growing of rubber trees, etc.

The initial experiments were carried out in a slow but methodical manner for the next 9 years, demonstration forests being started with a view to a future supply of pulpwood as well as rosin and turpentine. Various other species of pines were imported and planted, but none found to compare with their native stock.

By 1933, as a result of this pioneer work, sufficient data had been obtained to warrant the starting of a small commercial enterprise which yielded in the ensuing year 600 tons of rosin and turpentine.

In the next four years such progress and increase in yield had been made that a central distillation plant was built in 1937 at Lampahan near the foot of the old volcano Boer Tellong. This plant has a capacity of 40,000 annual tons of combined rosin and turpentine and can be expanded readily.

The total net forest area under development in this particular section amounts to 280,000 acres, which is conservatively expected to give a yield of 750 kg. per hectare, or 680 pounds per acre per year of rosin and turps, equivalent to over 90,000 tons per year, and, in addition, pulpwood from the thinning operations will average a cord per acre per year excluding cat faces of tapped out trees which will be used for fuel. The output of pulpwood will depend on the economic ratio in value of future paper products versus the naval stores. Other areas will also be progressively developed in ratio of the demand.

In 1936, the government plantation laboratories commenced to investigate the pulping possibilities of these pines, and finding it somewhat similar to those in the southern United States, sent their technical director to this country to observe the new developments and mills in the South for reduction under the kraft or sulphate process.

The difficulty to be overcome in considering a pulping operation was the ques-

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CENTRAL MACHINE WORKS

437½ S. Senate Ave., Indianapolis, Ind.

tion of transportation of the wood to a suitable mill site. The forest areas being in mountainous country were inaccessible to railroads for either raw materials or finished product. As they lay mostly, however, upon the slopes draining into the Djamboe Atje River, experiments were made with the idea of floating the pulpwood down this stream some 150 miles to Tenpanbate within a short distance of both port and rail facilities along the lowlands bordering the east coast of Sumatra.

Test runs on river-driven wood when dried out for relatively short periods at the proper season indicated that the loss by sinking would not exceed 3 per cent.

With the demonstrated assurance that a means for transporting wood was obtainable and that it had good pulping qualities, a long fiber length, and uniformity of moisture and quality, the government decided early in 1941, in spite of unsettled world conditions, to proceed immediately with plans for a sulphate pulp and paper mill of 150 daily tons capacity, of which 75 tons will be bleached, a ready market being available for such products in the Indies for wrapping, containers, and other papers for use both in domestic consumption and export packaging. This mill and other industrial projects are to be designed and built by American engineers and contractors, and it is believed will prove to be the beginning of a substantial export trade from the United States on construction and industrial equipment, as well as supplies which in the past have gone to Germany and others.

The early demonstration tracts and subsequent commercial operations clearly developed that the yield was greater from young trees than the old, and that advantage would have to be taken of their marvelous possibilities for quick growth and that because of this rapid growth thinning had to be carried out; also, that yield was not only a function of growth and development of the stem but of the branches as well.

A careful study of the effects of thinning out was made by dividing the demonstration forests into small tracts, each thinned at different rates and the results compiled. These studies developed several important factors; if the thinning was too great, the young trees developed too rapidly and extended their tops, while the stems tended to curve and bend, thus creating compression wood at these points. Curiously enough, the second growth shows some tendency to become crooked at all times, whereas the virgin tree was straight and tall. A fairly definite ratio of amount and period of thinning was established in relation to yield as well as growth, and data is continuously being collected.

The first tapping of second growth trees usually commences in about eight years when there are approximately 700 trees per hectare, selecting trees of about 7 inches diameter. After this, a combination of tapping and thinning is carried out. Every three years, certain trees are selected for thinning and are tapped to death in about three years before cutting. In the meantime, the remaining sturdier trees are tapped less severely so as to maintain their growth, usually starting with one face, and after three years, changing to the opposite side with a new face to allow the old face wound to gradually close. When the diameter of the tree has reached 12 inches, two faces together are usually employed instead of one.

The thinning, tapping, and selecting continues until probably only 100 healthy trees per hectare remain. These are used as producers for many years until, based on the economic calculations of yield values, it may be found better to cut the area and replant. How long this cycle will be, it is too early yet to determine.

The average cost for coolie labor in the government naval stores operations is approximately 40 cents per 9-hour day, including wages, housing, hospitals, and other welfare provisions.

At the head of the Netherlands East Indies Government Plantations, with its main office in Batavia, Java, is H. V. Van Lennep, whose dynamic energy, indomitable spirit and perseverence have worked marvels in this department, of which the naval stores operation is only a small one compared to rubber and other products. A forester at heart, with a high degree of technical knowledge, practical application and vision, coupled with a pleasing personality, he is never too tired to discuss the many plans he has for future utilization of the island's resources.

The naval stores forest operation and distillation plant are under the supervision of H. Oosterling as general manager, with headquarters at Lake Takengon, Sumatra, the center of the forest area which is divided into four or more districts of approximately 30,000 acres, each under a European district manager. These districts are again divided into areas of approximately 6,000 acres, under a local European manager, with its complement of native labor, totaling some 3,400 coolies from Java and 2,000 local laborers for the whole area.

The site selected for the paper mill will be developed as a general industrial center for other products, by-products, and chemical plants, many of which will be under the supervision of a nucleus of experienced American operators.

Assisting Mr. Van Lennep in the main office at Batavia is a loyal staff of technicians and engineers engaged in research, control, planning, etc., and H. R. Braak, technical director, who has been mainly in charge of the investigations and arrangements for the pulp and paper mill. He has made several visits to the United States in their interests, and as a member of TAPPI has been welcomed into the papermaking fraternity.

Acknowledgment—The writer is greatly indebted to H. V. Lennep, H. R. Braak, and their assistants, for the material given herein and for the opportunity to see at first hand the various operations in both Sumatra and Java.

We offer safe, economical solutions to all pulp and paper mill drainage problems with our twill weave, plain weave, sewed seam, and soldered seam wires.

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BELT FASTENERS AND RIP PLATES

For conveyor and elevator belts of all thicknesses, makes a tight butt joint of great strength and durability. Compresses belt ends between toothed cupped plates. Templates and FLEXCO Clips speed application. 6 sizes. Made in steel, "Monel Metal", non-magnetic and abrasion resisting alloys.

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There are CAMACHINES for handling tissue, others for handling board; CAMACHINES ranging in width from 18" to 310"; semi-automatic CAMACHINES for turning out small rolls and other CAMACHINES for rewinding rolls to 60" or even 72" diameter; score-cut CAMACHINES and shear-cut CAMACHINES; CAMACHINES for rewinding all rolls side by side on one shaft, also CAMACHINES with two rewinding shafts to provide positive separation by winding adjacent strips onto separate shafts; CAMACHINES with special rewind shafts for handling unevenly coated papers. Some of the latest CAMACHINES are arranged with web tension control, which makes it unnecessary to depend on the operator's skill for proper tension.

Finally, there are CAMACHINES equipped with an "electric eye" for assuring that all rolls will be wound with perfectly straight ends.

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NEW EQUIPMENT AND SUPPLIES

Protective Lighting Fixture

Goodrich Electric Co., 4600 Belle Plaine Ave., Chicago, has announced a new lighting fixture for use around industrial plants where protective illumination is desired. Elliptical in shape, the fixture provides a wide lateral distribution of light, thus making it possible through proper spacing of fixtures to create a brilliant barrier of light

Angle Style Direct Style

around property lines without illuminating buildings and grounds. Watchmen, remaining in the darkness, can spot the entrance of any intruder into the brightly lighted boundary area. Designed for mounting on a standard two-inch pipe, the fixture, designated as the *Elipso Standlite*, is available in two styles, namely: Direct Style and Angle Style. The Direct Style fixture delivers light laterally; the Angle Style provides a slight forward throw. The fixture is finished in porcelain enamel and is entirely weatherproof.

Heat Exchanger

The Girdler Corp., Louisville, Ky., has announced a continuous, closed type of heat transfer mechanism, the *Votator*, for the handling of liquids and viscous materials. Both horizontal and end-cross sections of a unit are shown in the accompanying illustration. The unit has a high ratio of heat transfer to volume, and only a thin wall separates the product from the heat transfer medium. The scrapers, which revolve, continuously expose the heat transfer surface by removing the film from the contact wall surface. According to the manufacturer, the heat transfer is so rapid that many products can be cooled well below the crystallization point and discharged from the unit in a liquid state.

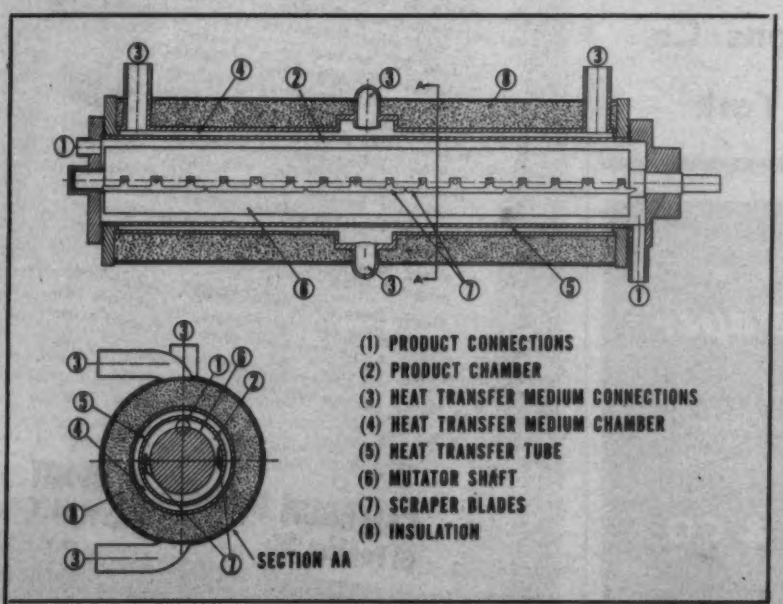
Low temperature refrigerants or high temperature steam can be used for the heat transfer medium. The metal jacket surrounding the heat transfer medium is heavily insulated, and the entire tube assembly is protected by a substantial metal cover.

Pipe Strainers

Blackmer Pump Co., Grand Rapids, Mich., has put on the market a series of strainers (*Ezy-Kleen*) for pipe sizes from 1 to 6 in. Iron bodies are standard; bronze bodies and steam-jacketed bodies also can be furnished. The baskets are of steel or brass woven wire cloth, in fine, medium or coarse mesh, and are reinforced. Furnished in five sizes from 50 to 700 gpm., standard constructions are for operating pressures up to 50 psi. and for temperatures up to 275 Fahr. Strainers for higher pressures and temperatures can be furnished on special order.

A Glue for Blackouts

Midland Glue Products Co., 1478 Madison Ave., Detroit, Mich., has developed a glue for use in preparing windows for blackouts. The glue, designated as No. 222 *Blackout Glue*, can be applied with brush or it can be sprayed. The suggested procedure for using it consists first in painting the window panes with black paint. Then the glue is applied and waterproof paper, cardboard, or some such material is adhered to it. It is claimed that the glue gives a permanent waterproof bond, and also acts as a shatterproofing agent in the event of bombings.



Hand Pump Metering Unit

Blackmer Pump Co., Grand Rapids, Mich., has developed a hand-operated pumping unit for use in industrial stock-rooms or elsewhere where oils, paints, solvents and similar liquids are dispensed from under-floor storage, and where accurate measurement is important. The unit, known as *BY-809 Hand Pump*, consists of a geared type rotary pump, crank, meter, spout, drip pan and return pipe, pedestal base and support. The unit also can be furnished (less pedestal base, support pipe and drop pan assembly) equipped with standard hung attachment and suction pipe for use with drums or barrels, if desired. The capacity of the pump is 20 gal. per minute at easy cranking speed, the dial face of the meter being calibrated in pints, and one revolution of the hand indicating a quart. A reset device is provided for measuring quantities less than a quart. The unit is equipped with a locking valve on the suction pipe.

Gas-Operated, Fork-Type Truck

Clark Tructractor Division, Clark Equipment Co., Battle Creek, Mich., has announced a compact, gas-powered, fork-type truck, the *Clipper*, which is offered in capacities of 1,000, 1,500, and 2,000 lb. and with standard finger lifting heights of 60 to 108 in., other special heights optional. The

truck is equipped with a four-cylinder industrial truck engine, front wheel drive, rear wheel steering arrangement, hydraulic lift and tilt, self starter and hydraulic brakes. The driver rides on a spring suspended seat with all controls within easy reach, thus permitting safe operation at speeds from one to seven miles per hour, forward or reverse.

Belt Vulcanizer

The B. F. Goodrich Co., Akron, Ohio, has announced a change in design of its No. 28 belt vulcanizer. The new design utilizing a square end rather than a diagonal end, and, therefore, designated as *"Square End No. 28,"* has a platen 11 in. by 36½ in., an over-all length of 41 in.; and an over-all height of 23½ in. It weighs 380 lb. complete with sheet iron platen covers, curing pad, and two 25 ft. lengths of extension cord. The vulcanizer placed at right angles across the belt, will cure a belt 34 in. wide.

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Wood Cleaners. Also with vertical cutting heads.

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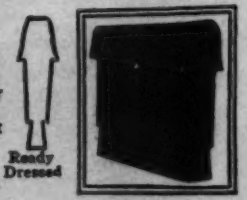

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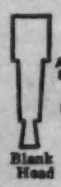

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OVERLOAD YOUR HOIST

○ Although WRIGHT HOIST are built with load-carrying factors much in excess of their rated capacities, like many other well-made pieces of mechanical equipment built for specific duty, they should not be overloaded. Overloading is dangerous—to men, materials, machinery and steady production. Abuse to machinery, today, is akin to sabotage.

WATCH THE BOTTOM HOOK

• Wright load hooks are drop-forged from special steel which, when subjected to excessive overloading, gives visible warning by opening slowly. When the bottom hook has started to open, look to the top hook, too, for while it is stronger than the bottom hook, it also may be reaching a danger point.

WATCH THE LOAD CHAIN

• WRIGHT HOIST load chains are electrically welded from special analysis steel, exceptionally high in tensile strength and elastic limit. Chains that are excessively overloaded will stretch out of pitch, thus preventing proper fit with precision load wheel pockets. This results in destructive wear to both chain and load wheel. Keep your chains well-lubricated for long life.

Victory demands all out efficiency in production. Victory demands speed. Victory demands steel. Abuse of machinery wastes all three. Take proper care of your WRIGHT HOIST so that it lasts. You can find the name of your nearest Wright distributor in the telephone book.

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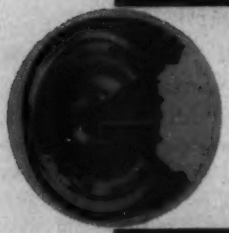

A SAVING AT EVERY TURN

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LONG BEACH, CALIFORNIA
26 N. CLINTON ST., CHICAGO, ILL.
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Signalling Controller for Testing Condensate

Leeds & Northrup Co., 4934 Stenton Ave., Philadelphia, Pa., has developed a signalling controller for the automatic testing of condensate purity. This equipment employs the same electrical-balance principle of Micromax instruments; but, unlike those instruments, neither indicates nor records the measurement. It simply signals and, if desired, controls.

Measurement of condensate purity is based on the fact that dissolved impurities lower the electrolytic resistance of water.

To detect this resistance, a conductivity cell is mounted in the condensate line. A pair of ordinary insulated wires connect the cell to the signalling instrument.

On the front of its case, the instrument has two signal lights (a green and a red), the green light operating as long as the purity of the condensate is above the allowable limit, the red light operating when an excess of contaminants is present.

The instrument comes equipped with a set of contacts through which it can operate a bell or horn when the red light is on, or, by regulating a motor-driven, three-way valve in the condensate line, it can provide automatic, two-position control.

Grease Digestant

Curran Corp., Malden, Mass., has announced a mineral grease and dirt digestive solvent, designating it as *Gunk X-11*. Available in the form of a concentrate, the material may be diluted with a grease solvent before using it in an open cleaning tank or vat. The manufacturer states that the new solvent not only takes the cling out of hard mineral dirt and grease accretions but also emulsifies them so that they may be rinsed away with a water hose without clogging sewer drains or presenting a fire hazard.

Cement-Asbestos Pipe

The United States Stoneware Co., Akron, Ohio, has announced a line of cement-asbestos pipe under the trade-name *"Roxite."* This pipe, manufactured by a patented high pressure process, is available in any length up to 14 ft. and in sizes from ¾ in. up to and including 8 in. I. D. On special order, 10 in and 12 in. I. D. sizes also can be secured. Any size of pipe may be furnished coated with a synthetic resin or lined with a corrosion-resistant material. Patented sleeves and fittings are used to couple the pipe, no special tools being necessary for assembling. The uncoated and the unlined pipe is suggested by the manufacturer for the handling of a wide range of mildly corrosive solutions, for transporting processing water which must be kept free of metallic contamination, and for handling fumes and gases in ventilation ducts and stacks. The coated and the lined pipe have been developed for a particular range of service, both in respect to the fluid to be handled and the mechanical severity of the operating conditions.

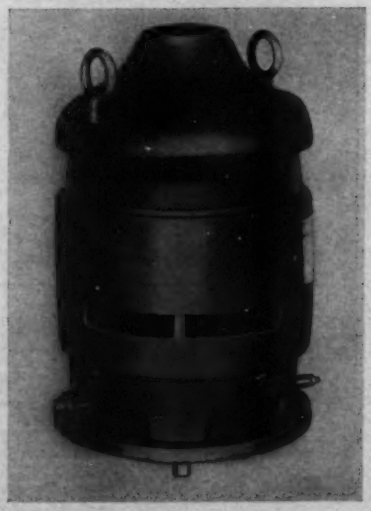
Motor Line Increased

The General Electric Co., Schenectady, N. Y., has added three new motors to its *Tri-Clad line;* namely, a vertical general-purpose polyphase motor, a vertical shielded polyphase motor (1 to 20 hp.), and a vertical shielded single-phase motor (1 to 5 hp.).

The frame and cover of the general purpose motor has been designed to give added protection to electrical parts, without adding materially to the over-all height. The location of eyebolts makes the motor easy to handle; while a variety of bases permits the motor to meet many applications and mounting requirements.

The polyphase shielded-type motor is available in either solid-shaft or hollow-shaft construction; the single-phase shielded-type motor, only in solid-shaft construction. Both shielded types are for normal-thrust or high-thrust application.

In the motors of the shielded type, covers are contoured to deflect liquids and falling objects; openings in stator frame and end shields are protected; and air is discharged downward at low velocity. Likewise, all



frame sizes have common mounting dimensions; and the motors can be rotated to any one of four base positions without modification of the supporting structure.

The manufacturer suggests the suitability of the general purpose motor for agitators, mixers, and similar applications; the shielded types, especially for pumping applications.

USE THOSE REJECTS!

Bauer Double-Disc Pulper Saves Stock, Cuts H.P., Increases Quality

This is an actual case history: A prominent newsprint mill has been able to show that by grinding with 75 H.P. days per ton and getting about 4% in rejects, they could improve this situation, by making the following changes:

1) Production could be increased by coarser grinding with less power.

2) The rejects, now 8% instead of 4% could be defibered in a Bauer double-disc pulper and the product included in the main furnish.

Net result: reduction in H.P. from 75 to 57 H.P. days per ton, maintaining the same original stock quality.

How are such results possible? What other stocks can be profitably defibered by Bauer? The answers to these important questions await your letter or telephone call.

THE BAUER BROS. CO. SPRINGFIELD, OHIO

Appleton Wires are Good wires

Appleton Wire Works, Inc.
Appleton, Wis.

TECHNICAL DEVELOPMENTS

These abstracts are of the latest developments found in the American and foreign press.

Levopimaric Acid in Pine Oleoresin

Levopimaric acid (an important component of gum rosin) can now be determined by a new technique. It forms an addition product in the cold, with maleic anhydride, which is practically insoluble in normal pentane (At 20 C. the addition product shows a solubility of about 30 milligrams per 100 cc. pentane). In making the analysis, the oleoresin is dissolved in pentane, and the solution filtered free from impurities. The acid concentration is determined by titration with alkali, and then a known volume of this solution is allowed to react in an "iodine flask" with a definite amount of maleic anhydride in acetone. The maleic anhydride solution is standardized and must be present in excess. The mixture is shaken and allowed to stand for 4 hours at 20 C. The contents are then transferred to a separatory funnel with benzene and the excess of maleic anhydride is extracted with water, and the aqueous extracts washed with benzene. The various combined water extracts, which now contain maleic acid, are titrated with standard alkali using phenolphthalein. The amount of maleic anhydride originally present minus that given by this titration represents the amount that reacted with the pimaric acid. A gravimetric method, based on the formation of the same addition product is also described. The volumetric method gives results 2-3 per cent lower than does the gravimetric. During the turpentining period, the yield of pimaric acid dropped slightly but appreciably as the seasom progressed. Details of both methods are given. E. E. Fleck and Samuel Palkin. Ind. Eng. Chem. (Anal. Ed.) Vol. 14, No. 2, 146-7 (1942).

Chlorine and Salt Cake

New sources of chlorine and salt cake are urgent. The interaction of sulphur trioxide and sodium chloride suggests a possible method for the inexpensive production of sodium sulphate and chlorine. In part the process involves the following reactions: NaCl and gaseous SO_3 form addition compounds in which one, two, and possibly three moles of sulphur trioxide react with one mole of NaCl, but the reaction is inhibited by the formation of crusts. The higher addition compounds are unstable. Above 115 C., the highest addition compound decomposes into SO_3 and $NaSO_3Cl$ (sodium chlorosulphonate). Between 225 and 300 C., 2 molecules of the latter compound give rise to one mole of sulphur dioxide and one mole chlorine. The residual solid is a mixture of sodium pyrosulphate and NaCl. On heating this above 330 deg. Cl, SO_2 and Na_2SO_4 are formed. The kinetics of the last two reactions were studied and the rate constants were determined at several temperatures. A process which would involve these reactions has been compared with other processes for salt cake formation. Arthur W. Hixon and Alvan H. Tenney. Ind. Eng. Chem. 33, No. 12, 1472-84 (1941).

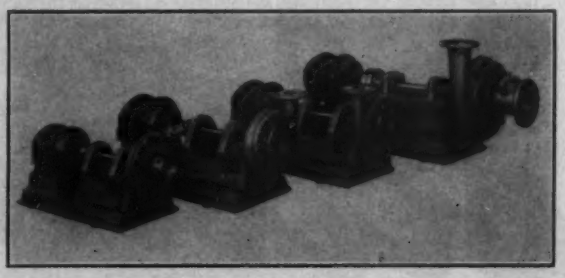
Hardwood Cellulose Pulp Purification

Unbleached sulphite pulps from yellow and white birch, beech, and maple, may be converted into practically white products having chemical and physical properties suitable for paper and for the preparation of cellulose esters. The author describes the extraction of constituents other than alpha cellulose and these data are compared with those on red spruce and balsam, and kraft pulps. Mechanical removal of fines, or very short fibers, permits elimination of appreciable portions of ether soluble matter. This is done by spray-washing of a thin pulp suspension on a 100-mesh screen. Removal of resins can also be accomplished by adding detergents to the untreated fibers; to hot alkali solutions used to prepare alpha pulp; or to the final bleach liquors. Various methods of removing pentosans and hemicelluloses generally are described. These include: (a) adjustments in cooking liquor composition; (b) use of dilute aqueous alkalis at 50-100 deg., or stronger alkali solutions at lower temperatures; (c) preliminary hydrolyses with hot acid solutions followed by alkali treatment; (d) digestion with salts (like $NaHSO_3$) which do not materially attack cellulose but which remove pentosans; (e) extraction with low concentration of cuprammonium solutions; (f) hydrolysis at 160-200 C. in the presence of buffers like acetates, borates, aluminates, etc. Attempts to remove the more resistant pentosans resulted in loss of hardwood cellulose. Evidently the use of dilute cuprammonium hydroxide solution above 40 C. furnishes a method for obtaining alpha cellulose very low in pentosans. George A. Richter. Ind. Eng. Chem. 33, 1518-28 (1941).

Control in Russian Sulphite Pulp Manufacture

Pulp digestion is controlled by determining the viscosity of cuprammonium solutions and hardness, and by noting the color of the liquor. Unbleached pulp viscosities were not allowed to fall below 350 millipoises, and the Björkman hardness should be 60-70. The liquor should not

BUILT TO YOUR SPECIAL ORDER



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be darker than a 0.1 normal iodine solution (which corresponds to what is termed No. 3 on a color scale prepared from coffee solutions by the Syas'skii Cellulose Trust). The bleaching operation is also controlled by viscosity determinations. The interdependence of viscosities and strength is discussed. E. M. Edemskaya. Bumazhnaya Prom. 1939, No. 8, 17-23; through C.A. 36, 1492 (1942).

Pulp-stone Structure

Great strains are withstood better by artificial than by natural stones, so the former are used almost exclusively in larger installations. Every effort is made to produce stones from carefully selected sands and cements, and attention is paid to particle size, porosity, strength and hardness, so that the best groundwood may be manufactured with minimum power consumption. The stones must also possess good resistance to heat and to mechanical stress. The sand used in the grinding surface should be octahedral in shape, sharp-edged and of even structure. The binding substance determines the hardness of the stone, and on this property depends the time period during which the stone retains its cutting power, and how often sharpening will be required. After each burring operation (no matter how carefully this is carried out) there will always be a change in pulp quality. Where a number of grinders are used this change can be met by mixing pulps, but this is not feasible in small mills. The following are the most widely known artificial stones used in Finland in 1941: Norröna, Herkules, Sampo, and Ideal. In one mill (Martinniemi), control has been used over the behavior of the stones and the resulting pulp. The Herkules Aoo stone proved most suitable to their conditions, giving a uniform pulp and requiring infrequent burring. The original article gives a graph showing the performance during a week without burring. Artificial pulp-stones which furnish newsprint almost entirely without the help of sharpening devices are now available, the structure of the stone being such that the required degree of sharpening is automatically maintained. However this type of stone is only effective when conditions (like wood quality) are favorable. Heikki Pellinen. Finnish Timber J. 23, No. 10, 192 (May 31, 1941) through Bull. Inst. Paper Chem., 12, 224 (1942).

Pine Wood Tall Oil

The components of pine wood which are retained as soaps contain 45.8 per cent water, and about 45 per cent resin and fatty acids. On acidification the crude tall oil is formed, and this has a density of 0.99, acid number 145, saponification number of 165, unsaponifiable matter 10 per cent, resin acids 57 per cent and fatty acids 33 per cent. The resin acids may be separated from the fatty acids by esterification with methanol and sulphuric acid and dissolving in ether. The mixture of fatty acids has an iodine number of 176, acid number of 175, and a mean molecular weight of 281. The acids are 22.7 per cent oleic, 71.3 percent linolenic and very small amounts of linoleic acid. G. Botto-Micca. Chimicae. Industria (Italy) through C.A., 36, 1492 (1942).

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PAPERMAKING PATENTS

IN THE UNITED STATES—Compiled by James Atkins, Registered Patent Attorney

Inquiries should be addressed to James Atkins, Munsey Building, Washington, D. C.

Machine for Laminating Paper

Patent No. 2,255,397. Melvin H. Sidebotham, West Newton, Mass., assignor of one-half to Harlow M. Russell, Chelsea, Mass. Application October 5, 1938, Serial No. 233,431. 5 Claims. (Cl. 154—37). In a paper laminating machine, comprising a wax heating unit, a wax feeding cylinder positioned to rotate in liquid wax, means to cool the wax picked up by the wax feeding cylinder, and a stationary scraping plate positioned to scrape the cooled wax from the rotating wax feeding cylinder and depositing the wax between two webs of paper.

Manufacture of Greaseproof Material

Patent No. 2,258,851. Harry C. Fisher, Cincinnati, and Walter E. Sony, Middletown, Ohio, assignors to The Gardner-Richardson Company, Middletown, Ohio, a corporation of Ohio. Application August 26, 1939, Serial No. 292,066. 13 Claims. (Cl. 91—68). A process of the character described for effecting the application of a greaseproof surfacing film to a sheet of paper having a lower flexible surface coating thereon which comprises applying to said lower surface coating of the sheet a lower coating of film-forming greaseproof cellulose material dissolved in an organic solvent under pressure such as to effect the intimate incorporation and bonding of the formed film to and upon said flexible surface coating, and thereafter preforming an overlying film of greaseproof cellulose material dissolved in an organic solvent by passage of a solution thereof through a nip composed of oppositely rotating rolls, and bringing such preformed film on the roll while still wet with solvent into transferring relation with the sheet to apply said preformed film as an overlying greaseproof coating onto said lower film to be intimately and homogeneously united with said lower film through the action of said solvent and maintained in secure bonded relation with said sheet of paper through the action of said lower film.

Apparatus for Conditioning Paper

Patent No. 2,256,507. Charles G. Weber, Arlington, Va., and Martin N. Geib, Washington, D. C., assignors to the Government of the United States, as represented by the Secretary of Commerce. Application July 28, 1939, Serial No. 286,966. 2 Claims. (Cl. 34—83). Granted under the act of March 3, 1883, as amended April 30, 1928; 370 O. G. 757). In combination with a conditioning chamber to receive paper or other hygroscopic material in sheet form, of a water spray apparatus which includes an air tight reservoir having an air tight inlet valve at its top through which water is introduced into the reservoir, a sight glass on the reservoir by which the amount of water in the reservoir may be determined, suitable gage marks being provided on the apparatus in association with the sight glass, the reservoir including a conical bottom, a water valve connected to the conical bottom and a pipe connected to the water valve, a feed tank positioned under the reservoir to receive water therefrom, the said pipe on the water valve extending into the feed tank and into the water therein in such manner that the water in the feed tank seals the end of the said pipe and shuts off air to the reservoir, a discharge pipe connected to the feed tank near the bottom thereof, a spray nozzle on the end of the discharge pipe and a pressure air line connected to the spray nozzle, whereby the contents of the reservoir may be sprayed in measured amounts from the nozzle under the action of air under pressure from the airline, a blower adjacent the nozzle to receive the water sprayed in measured amounts therefrom and to deliver the same to the paper conditioning chamber.

Industrial and Papermakers' Felts

Patent No. 21,890. Patrick H. Walsh, Boston, Mass., and Percival T. Gates, Montclair, N. J., assignors to Drycor Felt Company, Belleville, N. J., a corporation of New Jersey. Original No. 2,165,772, dated July 11, 1939, Serial No. 140,652, May 4, 1937. Application for reissue January 2, 1940, Serial No. 312,689. 3 Claims. (Cl. 28—4). As a new article of manufacture, papermakers' felts for use in papermaking machinery for supporting and draining paper-making material, comprising a base fabric consisting of ply strands forming the warp, with cable twisted strands constituting the filling, said ply strands being relatively less stretching than said cable twisted strands, a plurality of needled fleeces at the opposite surfaces of said base material, the top surface comprising a closely needled smooth fleece for carrying pulp material, and the bottom surface comprising a fleece of coarser form permitting drainage from the pulp material therethru free of clogging, and said coarser fleece constituting a wear-resisting surface for driving over pulleys.

Vacuum Producing Apparatus for Paper Making Machines

Patent No. 2,264,168. Ernest Poirier, Waterville, Maine. Application May 6, 1937, Serial No. 141,104. 12 Claims. (Cl. 92—51). In an apparatus for extracting water from a traveling web of paper or the like, the combination with a vacuum box over which the web runs in water extracting relationship thereto, of a vacuum casing communicating with said box and into which the water extracted by the box is delivered, said casing being divided into a plurality of compartments, a drop leg leading downwardly from said casing, said leg being composed of a plurality of conduits communicating with said compartments and so arranged that the number of conduits utilized at any time to carry the water away from said box will automatically change with changes in the volume of water discharged by the box and means for sealing the lower end of said drop leg.

Moisture Vapor Proof Paper Lacquer

Patent No. 2,266,159. Edmond H. Bucy, Stamford, Conn., assignor to Atlas Powder Company, Wilmington, Del., a corporation of Delaware. Application December 15, 1938, Serial No. 245,948. 18 Claims. (Cl. 260—737). A process of preparing a moisture vapor proof lacquer which comprises fusing together a fusible resin and a wax into a homogeneous melt, and dissolving the homogeneous resin-wax mixture and a halogenated rubber and a plasticizer in a suitable volatile organic solvent therefor.

Vacuum Producing Apparatus for Paper Making Machines

Patent No. 2,264,169. Ernest Poirier, Waterville, Maine. Application April 6, 1938, Serial No. 200,329. 8 Claims. (Cl. 92—51). That improvement in methods of controlling the operation of a vacuum box in a paper making machine, which consists in causing the water extracted by the box from the web of paper being made to create a working vacuum in said box of an intensity depending chiefly upon the character of said web and the volume of water so extracted, and constantly maintaining a yielding throttling action on the discharge of water from the box.

Apparatus for Making Paper

Patent No. 2,271,351. John A. Spencer, South Hadley Falls, Mass., assignor to Spencer Specialties Inc., South Hadley Falls, Mass., a corporation of Massachusetts. Application April 12, 1940, Serial No. 329,341. 6 Claims. (Cl. 92—48). The combination in a paper making machine of, a traveling foraminous element, means for moving the same including a rotatable member rotatable in synchronism therewith, a dandy roll for acting on paper being formed on said element having a shaft, means for rotatably supporting said dandy, means for rotatably supporting a dandy drive shaft independently of the dandy and in substantial alignment with the shaft thereof, a dandy drive shaft rotatable therein, coupling means for connecting said shaft and dandy shaft, and positive driving connections between said rotatable member and drive shaft whereby said dandy is positively driven from said rotatable member to provide a surface speed thereof that bears a predetermined relation to that of said wire.

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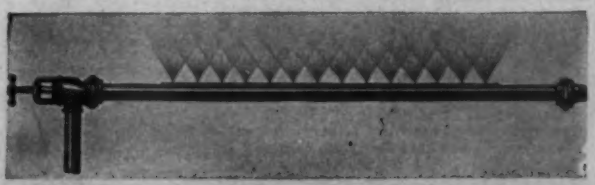

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New Catalogues and Publications

Allis-Chalmers, Milwaukee, Wis.—Switchboards of standardized design for economy, yet custom-built to fit specific needs are stressed in Bulletin No. B-6149, just released. Types of boards, as well as outstanding features, are given. This company has also issued another booklet, B 6018-B, a 36-page engineering data book for pumps. Head capacity tables and dimension charts aid in selecting proper pumps for individual applications, while cross sections and construction details help to illustrate this complete pump line. The motor-pump units and base-mounted units described are built in a wide range of sizes for capacities from 10 to 2750 g.p.m. and for heads up to 575 ft.

American Brake Shoe & Foundry Company, Chicago Heights, Ill.—A booklet describing this company's wartime service in comparison to its prewar service has just been released. A list of products manufactured in the 58 plants and the branch of service using these products is included.

American Foundry Equipment Company, Mishawaka, Ind.—The dust control problem is thoroughly discussed in Catalogue No. 72, and the three questions why, where, and how are answered. The knocked-down, assembled, and series "B" assembled types of "Dustube" dust collectors are described and illustrated. The last few pages of the catalogue contain engineering information for efficient operation of a dust control system. Copies may be obtained from the manufacturer.

Babcock & Wilcox Tube Co., Beaver Falls, Pa.—A new, convenient Technical Data Card has just been issued. This card gives a complete table of tolerances for round, seamless-steel, mechanical tubing for both cold-drawn and hot-finished tubes. Copies may be had by writing to the company and asking for TDC-115.

Bailey Meter Co., Cleveland, Ohio—This company has prepared a 20-page bulletin, No. 16, entitled "How to Safely Stretch Steaming Capacity" as an aid to power engineers faced with the necessity of meeting sharply increased steam demands and obliged to operate their boiler plants on a 168-hour week schedule. The information is found under the general headings of: Check Condition of Boiler and Furnace, Check Operating procedure, Check Possibilities for Modernization, and Base Daily Operation on Accurate Measurements and Records.

Calco Chemical Div., American Cyanamid Co., Bound Brook, N. J.—The various controls which have been established by the War Production Board are summerized in the new technical bulletin entitled "The Priorities System as Related to the Chemical Industry," just issued by this division. Copies available on request.

The Foxboro Co., Foxboro, Mass.—The Foxboro line of pressure recorders is illustrated and described in the new Catalogue 22-A. This catalogue covers instruments for the measurement and recording of industrial pressures of all kinds, in ranges from 1 inch of water to 20,000 lb. Methods of instrument mounting, types of cases available, integral electric signal systems, and accessory equipment are additional subjects contained within the 32 pages of this catalogue.

General Electric, Schenectady, N. Y.—Complete information regarding varnished cambric cable No. 1799, is given in this 11-page booklet. Included are the story of its manufacture, general properties, comparison to rubber, and uses. It is well illustrated, containing photographs of various steps in manufacture, as well as showing representative types of the cable. This booklet is available upon request.

Manning, Maxwell & Moore, Inc., Bridgeport, Conn.—Information on the complete line of Ashcroft gauges is available in the latest catalogue of this company. Indicating gauges, recording gauges, duragauges, and gauge testers are fully described and illustrated. Pertinent engineering information is included.

Sarco Co., Inc., New York City—New bulletin (No. 140) which forms a section of this company's new catalogue and covers this company's line of float-thermostatic steam traps, compressed air traps, and liquid level controls. This equipment is illustrated with diagrams and pictures. Comprehensive tables are included giving the capacities of the various types. Dimensional charts and diagrams are also used.

United States Pulp Producers' Association, N. Y.—The annual "pocket-folder" of United States wood pulp statistics has been released. It contains complete preliminary estimates of 1941 capacity, production, consumption, domestic sales, imports, and exports for the industry as a whole and by major grades. All but four companies producing chemical pulp in the United States cooperated directly with the Pulp Producers' Association, or through the Soda Pulp Association, to make this report possible.

United States Stoneware Co., N. Y.—Bulletin No. 550, Acid-Proof Piping and Fittings, has just been issued. Complete and comprehensive data regarding this piping and pipe fittings is given. Cross-sectional diagrams and charts are included in this bulletin.

Westinghouse Electric and Manufacturing Co., East Pittsburgh, Pa.—The development of a pocket size "slide rule" selector for electricians, plant maintenance men and others interested in the selection of electric drive equipment has recently been announced by this company. Such information as the proper type of motor for each of 44 industrial applications, and various uses, specifications, performance ratings, and control classes for the required type can be secured. Information is obtained from this handy selector by setting the cardboard slide for the proper motor type and then reading its specifications through the window in the acetate envelope. The reverse side of the selector shows which of the various magnetic and manual controls are available for each type of motor and lists the proper control number. This slide, SA-714, is available from district offices and distributors.

Wedack Electric Tool Corp., Chicago—A catalogue illustrating and describing electric tools for construction, installation, production, maintenance has been sent out. Twelve different types of portable drills are included together with specification tables. Fifteen different electric grinders are illustrated and described.

Books

Bookvertising—Compiled by Herbert J. Stoeckel, Director of Research, Bookbinding & Book Production Magazine, and edited by R. Sherwood King, formerly Account Executive with Fuller Smith & Ross, Inc., and at present engaged in Defense Savings Bond advertising in Washington, D. C., this volume presents 55 case histories of firms, ranging from manufacturers and jobbers to trade associations and colleges, in printing and distributing books about their products or services. The first part of the book describes the experiences of firms and institutions with such efforts from the initial idea to the results achieved. The second part contains chapters by various authorities in the graphic arts explaining how to produce successful advertising books.

A number of the case studies cover publications of firms well known to the pulp and paper industry. The names of some of these firms, the title of the publication covered by the case study, and the author of the study follow: American Paper & Pulp Association, The Dictionary of Paper by John G. Strange, The Institute of Paper Chemistry; American Rolling Mill Co., Making Letters Talk Business by H. V. Mercer, Manager, Advertising Division; Asten-Hill Mfg. Co., The Story of Yang-Yin by Eugene A. Holland, Industrial and Technical Advertising; Beckett Paper Co., The Buckeye Books by Carl Richard Greer, Advertising Manager; Dodge Manufacturing Co., The Reason Why Book by W. W. French, Sales Promotion Manager; The B. F. Goodrich Company, Rubber as an Engineering Material by H. E. Van Petten, Manager, Mechanical Goods Advertising; Johns-Manville Corp., Johns-Manville Packings Catalog by Gordon F. Price, Sales Promotion Department; Reeves Pulley Company, Reeves Speed Control Handbook by J. M. Jewell, Advertising Manager; and Sherwin Williams Co., Paint & Color Style Guide by J. F. Gilday, T. J. Maloney, Inc.

The book, bound attractively in red cloth cover, has a page size of 9 in. by 12 in., contains 24 plates, and totals more than 200 pages. Its publisher, Saybrook House, 207 Fourth Ave., New York, N. Y., has priced it at $5.00 a copy.

Manufacture of Soda (Second Edition)—This book, recently published by Reinhold Publishing Corporation, 330 West Forty-second St., New York, N. Y., is the work of Te-Pang Hou, Ph.D. In this volume, Dr. Hou has revised, rearranged, and brought the material of the first edition up to date. He also has added five new chapters. In his own foreword, Dr. Hou states, "So much new material has been included throughout the text that this edition has virually the same status as a new book, as far as its preparation is concerned." Containing thirty-one chapters, the book is replete with tables and illustrations. It is a volume of approximately 600 pages, bound in blue cloth cover with backbone printing in gold. Published as American Chemical Society Monograph Series No. 65, the book is priced at $9.50 a copy by the publisher.

Training Oxy-Acetylene Welding and Cutting Operators—Divided into three chapters, this book of 88 pages outlines information that should be presented in a course for the training of welding operators, cutting operators, and inspectors. An introduction describes in considerable detail the organization of the book and gives suggestions for its use. Available through the Secretary of the International Acetylene Association, 30 East 42nd St., New York, N. Y., the book is priced at 25 cents a copy (paper-bound), 75 cents a copy (cloth-bound).

Wood Technology—Harry Donald Tiemann, the author of this volume, is a Senior Wood Physicist at the U. S. Forest Products Laboratory, and a Lecturer in Forest Products at the University of Wisconsin. His aim in presenting this work has been to give a clear perspective of such fundamental subjects as wood anatomy, wood physiology, wood chemistry, and timber physics; and to show the practical application of such subjects in the drying of lumber, timber preservation, and the chemical utilization of wood. Distinguishing features of American woods are covered by a classification key for use in the studying of wood samples. The book is well illustrated; is bound in stiff cloth cover; has a page size of 6 in. by 9 in.; and consists of 226 pages. The price of the book is $3.50 a copy; the publisher, Pitman Publishing Corp., 2 West 45th St., New York, N. Y.

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New Soft Blacks	3.75 to 4.00
New Light Seconds	2.50 to 2.75
New Dark Seconds	2.25 to 2.50
Khaki Cuttings—	
Mixed	3.25 to 3.50
O. D.	4.00 to 4.25
New White Canvas	8.00 to 8.50
New Mixed Blacks	2.75 to 3.00
Shirt Cuttings	
New White No. 1	8.00 to 8.25
Silesias No. 1	5.25 to 5.50
New Unbleached	8.25 to 8.50
Fancy	3.25 to 3.50
Linen Cuttings—	
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No. 1	31.00
No. 2	29.00
No. 3 and No. 4	27.00
Twos and Blues—	
Repacked	44.00
Thirds and Blues—	
Repacked	44.00
Miscellaneous	36.00
Whites, No. 1—	
Repacked	76.00
Miscellaneous	64.00
Whites, No. 2—	
Repacked	58.00
Miscellaneous	52.00

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	per cwt.
New Dark Cuttings	Nominal
New Mixed Cuttings	
New Light Silesias	
Light Flannelettes	
Unbleached Cuttings	
New White Cuttings	
New Light Oxfords	
New Light Prints	

RAGS (Foreign)
ex dock New York City

OLD RAGS

	per cwt.
No. 1 White Linens	Nominal
No. 2 White Linens	
No. 3 White Linens	
No. 4 White Linens	
No. 1 White Cottons	
No. 2 White Cottons	
No. 3 White Cottons	
No. 4 White Cottons	
Extra Light Prints	
Ord. Light Prints	
Med. Light Prints	
Dutch Blue Cottons	
French Blue Cottons	
French Blue Linens	
Checks and Blues	
Linsey Carnoots	
Dark Cottons	
Old Shapporius	

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Gunny No. 1—	
Foreign	Nominal
Domestic	4.50 to 4.75
Wool Tares—	
Light	4.25 to 4.50
Heavy	4.50 to 4.75
No. 1 Scrap Bagging	4.00 to 4.25
Manila Rope—	
Foreign	—
Domestic	*115.00-
New Burlap Cuttings	5.25 to 5.50
Jute Threads—	
Foreign (Nom.)	6.25 to 6.75
Domestic	5.50 to 6.00
Strings—	
Sisal	3.50 to 3.75
Soft jute	4.50 to 4.75
Mixed	1.25 to 1.50

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Hard White Env. Cuts	62.50-
Hard White, Unruled	57.50-
Hard White, Ruled	50.00-
Soft White, One-Cut	57.50-
Soft White, Misc.	43.00-
Fly Leaf, No. 1	33.50-
Fly Leaf, No. 2	22.50-
Fly Leaf, Woody, No. 1	25.00-
No. 2 Mixed Col. Woody	18.00-
Mixed Colored	15.00-
Flat Stock—	
Overissue Magazines	33.50-
No. 1 Heavy Magazines	31.50-
Mixed Books	30.50-
Ledger Stock—	
No. 1 White	42.50-
No. 1 Mixed (Colored)	37.50-
Manilas—	
New Env. Cuttings	53 00-
New Env. Cuts, One-Cut	47.50-
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Manila Tab Cards, Free of Ground Wood	45.00-
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Ground Wood Manila Tab Cards, Colored	20.00-
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Envelope Cuttings	45.00-
Mixed Env. or Bag Cuts	55.00-
Tripled Sorted No. 1 Brown	50.00-
New 100% Cor. Cuts	45.00-
No. 1 Old Assorted	35.00-
News—	
White Blank	33.00-
Overissue	17.00-
No. 1 Baled	15.00-
Old Corrugated Boxes	16.50-
New Corrugated Cuts	18.00-
Box Board Chips	14.50-
Dry Goods Waste	14.00-
No. 1 Mixed Paper	14.00-

CHEMICALS
f. o. b. shipping point

Alum (Papermakers)—	
Lump, cwt.	4.25-
Ground, cwt.	4.00-
Powdered, cwt.	4.40-
Blanc Fixe—	
Pulp, bulk, ton	40.00 to 46.00
Dry, barrels, pound	60.00 to -
Bleaching Powder—	
Drums, cwt.	2.25 to 3.10
Casein (Domestic Standard)—	
30-80 mesh (bags), lb.	21.50 to 22.50
80-100 mesh (bags), lb.	22.50 to 23.50
Argentine, lb.	19.00 to 20.00
China Clay—	
Domestic Filler	
Bulk (mine) ton	7.50 to 15.00
Domestic Coating	
Bulk (mine) ton	12.00 to 22.00
Imported (ship side)	
Bulk (lump) ton	15.00 to 26.00
Chlorine—	
Tank cars (wks) cwt.	2.00 to 2.25
Gelatine (silkin), lb.	.90 to .95
Glyc. (C.P.) drums, lb.	18.50 to 18.75
Litharge, powd., bbl., lb.	.00 to -
Rosin (Gum)—	
New York, per 100 lbs.	
E	3.52-
F	3.52-
G	3.52-
WW	5.30-
Rosin (Wood), carlots	3.19-
Salt Cake—	
Dom. bulk (wks) ton	16.00 to 17.00
Imp. bulks on dock—	
(Atl. ports) ton (Nom.)	20.00 to
Soda Ash—	
Bulk (works), cwt.	.90 to .95
Paper Bags, cwt.	1.05 to 1.35
Barrels, cwt.	1.05 to 1.35
Soda (Caustic)—	
Solid, drums, cwt.	2.30 -
Ground and flake, drums, cwt.	2.70 -
Sodium Silicate—	
60 deg., 55 gal. drums, (works) cwt.	1.85 to 2.00
40 deg., 55 gal. drums, (works) cwt.	.80 to 1.45
Starch—	
Pearl, 140 lb. bags, cwt.	3.27-
Pearl, barrels, cwt.	3.37-
Paper (Sp.) bags, cwt.	3.37-
barrels, cwt.	3.47-
Sulphur (crude)—	
(mine) bulk, long ton	18.00 to 20.50
Talc—	
Dom. 100 lb. bags (mine) ton	18.00 to 20.00
Imp. bulk, ton (Nom.)	—
Titanium Dioxide—	
Barium Pig., bbls., lb.	.05¾ to .06
Calcium Pig., bbls., lb.	.05 to .05¼
Zinc Sulphide, bbls., lb.	06¼ to .06½

CHEMICAL PULP
(Air-dry ton)

	per cwt.
Soda (Dom.) del'd. mill—	
Bleached, contract	3.30 -
Open market	(nominal)
Sulphate (Dom.) f. o. b. mill—	
Bleached	4.25 to 4.50
Kraft No. 1	3.50 to 3.75
Kraft, Southern, del.	3.25 to 3.50
Sulphate (Imp.) on dock—	
Bleached	(nominal)
Kraft No. 1	(nominal)
Kraft No. 2	(nominal)
Sulphite (For.)	
On dock—	
Prime bleached	(nominal)
Prime easy bleach	(nominal)
Prime strong unbl.	(nominal)
Sulphite (Dom.)	
Bleached, contract	3.83½ -
Bleached, open market	(nominal)
Unbleached, contract	3.17½ -
Unbleached, open market	(nominal)

MECHANICAL PULP
(Air-dry ton)

	per ton
No. 1 Dom. & Can. (f. o. b. pulp mill)	31.00 to 34.00
No. 1 Imp. (On dock)—	
Moist	—
Dry	—

PAPER
f. o. b. New York City

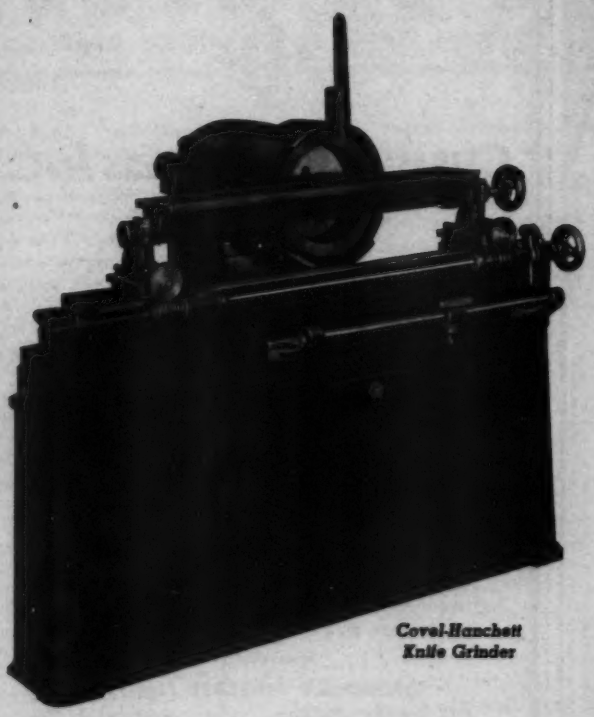
	per ton
Boards—	
Binders	80.00-
Chip	45.00-
Chip, sgl. sds. lined	60.00-
Coated, white patent	
.016	80.00-
.020 and heavier	75.00-
Kraft liner	60.00-
News	48.00-

	per cwt.
Book (uncoated)	
No. 1 Coated	15.50-
No. 2 Coated	14.00-
No. 3 Coated	13.25-
No. 4 Coated	12.75-
No. 2 Offset	11.75-
A Grade Super	10.75-
B Grade Super	10.25-
Bonds (Rag Content)—	
100% Rag	
Ext. No. 1	42.75 to 47.25
100% Rag	35.00 to 37.75
85% Rag	
75% Rag	26.90 to 29.00
65% Rag	
50% Rag	20.90 to 23.75
25% Rag	18.20 to 20.00
Regular Colors	1.00 cwt. extra
Bonds (Sulphite)—	
No. 1	11.70-
No. 2	10.75-
No. 4	9.90-
Colors	1.00 cwt. extra
Glassine (f. o. b. mill)—	
Embossed (25 lb. up)	13.75 to 14.25
Bleached (25 lb. up)	12.75 to 13.25
Unbleach. (25 lb. up)	11.50 to 12.00
Greaseproof—	
Bleach. (25 lb. up)	11.00 to 11.50
Unbleach. (25 lb. up)	10.00 to 10.50
Ledgers (Rag Content)—	
100% Rag	
Ext. No. 1	41.40 to 43.50
100% Rag	36.25 to 39.25
85% Rag	32.20 to 37.75
75% Rag	28.15 to 30.50
65% Rag	22.80 to 27.75
50% Rag	22.10 to 24.25
25% Rag	19.50 to 21.50
Regular Colors	1.00 cwt. extra
Ledgers (Sulphite)—	
No. 1	13.00-
No. 2	12.05-
No. 4	11.20-
News—	
Rolls (Contract)	80.00-
Rolls (Spot)	(nominal)
Sheets	88.00 -

	per ream
Tissues (Carlots)—	
White, No. 1	1.12½
White, No. 2	1.00-
Bleached Anti-Tarnish	1.20-
Colored	—
Anti-Tarnish Kraft	.70-
Manila	.90 to .95
Napkins, semi-crepe (12¼ lb. to M shts.) per m	.90 -
Napkins, full crepe and emb'sed (12¼ lb. to M shts.) per m.	.90 -
Toilet, Bleached (M shts.) per m	5.05 -
Toilet, Unbleached (M shts.) per m	4.25 -

	per case
Towels—	
Bleached	3.20 to 3.75
Unbleached	2.60 to 3.05

	per cwt.
Wrappings (Kraft)—	
Extra Quality	6.00 to 7.00
Super-Standard	5.25 to 6.25
Northern Standard	4.75 to 5.25
Southern Standard	4.75 to -
Wrappings (Sulphite and Bleached Kraft)— (Rolls, f. o. b. mill)	
Bleached papers—	
M.F.& M.G. Waxing, 20 lb. (Carloads only)	7.25 to 7.30
(10,000 lbs.)	7.50 to 7.75
Drug wrapp. 35 lb.	7.00 to 7.25
Unbleached Papers—	
Com. Grd. Butch. 40 lb.	5.25 to 5.50
No. 1 Butchers	5.50 to 5.75
No. 1 Instt. Parch & Dry Fin.Gros.Sulphite 30 lb.	6.25 to 6.50
No. 2 Instt. Parch & Dry Fin.Gros.Sulphite 30 lb.	6.00 to 6.25
Steam Finish, 50 lb.	5.00 to 5.25
Water Finish, 40 lb.	5.25 to 5.50
Manilas—	
Envp. Mia., Sub. 16-40 (No. 1)	6.00 to 6.25
Envp. Mia., Sub. 16-28 (No. 2)	5.75 to 6.00
Envp. Mia. (Prices based on large sheets untrim'd remarked, in bdls.)	
Wrapp. Mia. 35 lb. up—	
No. 1	6.00 to 6.25
No. 2	5.75 to 6.00
M. G. Sulphite and Kraft (other than Waxing)	
Grade A-35 lb.	7.20 to 7.40
Grade B-35 lb.	7.25 to 7.50



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ECONOMY IN KNIFE GRINDING

In the DN Covel-Hanchett Knife Grinder at the left there is guaranteed economy, accuracy and production. In either a motor drive or a belt drive type the standard equipment includes wet grinding system, automatic wheel feeds, internal belting, either cylinder or segmental wheel, smooth, sure reversing transmission for table and cabinet base enclosing feed mechanism. Precision grinding of flat or concave bevels at any angle, or square edge on knives of every description.

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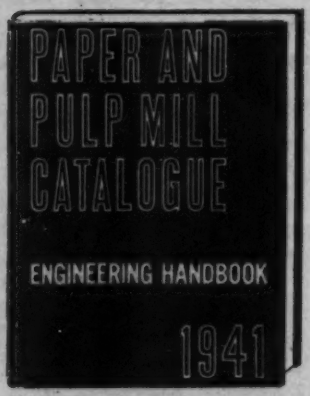

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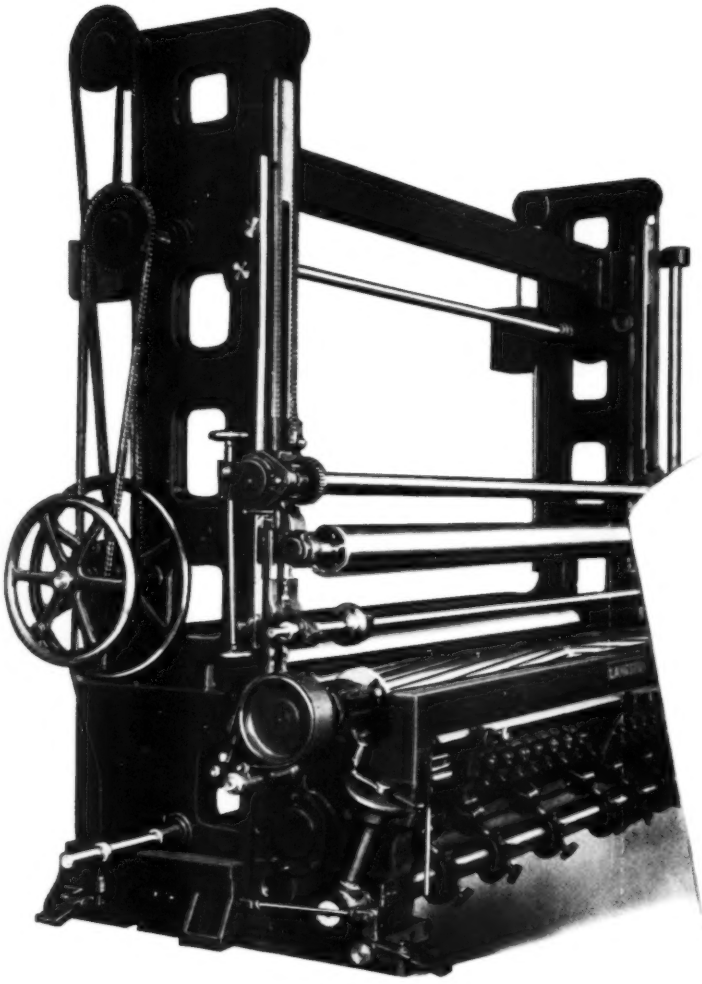

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Built 82"-92"-102"-122" wide. Speeds up to 2000 feet per minute. Vari-speed clutch pulley and V-belt shown, but direct connected motor or any desired drive can be provided.

Where the job is just a bit tougher—where the finished rolls must be square-edged, clean cut and of uniform density—there you'll find Langston Slitters and Roll Winders. Doing 24-hour duty in dozens of plants, these Langston machines are built to stand the grind of high-speed, quality production. For every grade of paper, for wide or narrow cuts, small or large diameters, there is a type and size to meet your needs.

★ ★ *rolls well-wound, of compact weight travel better and save on freight* ★ ★

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CAMDEN, NEW JERSEY

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SLITTERS & ROLL WINDERS

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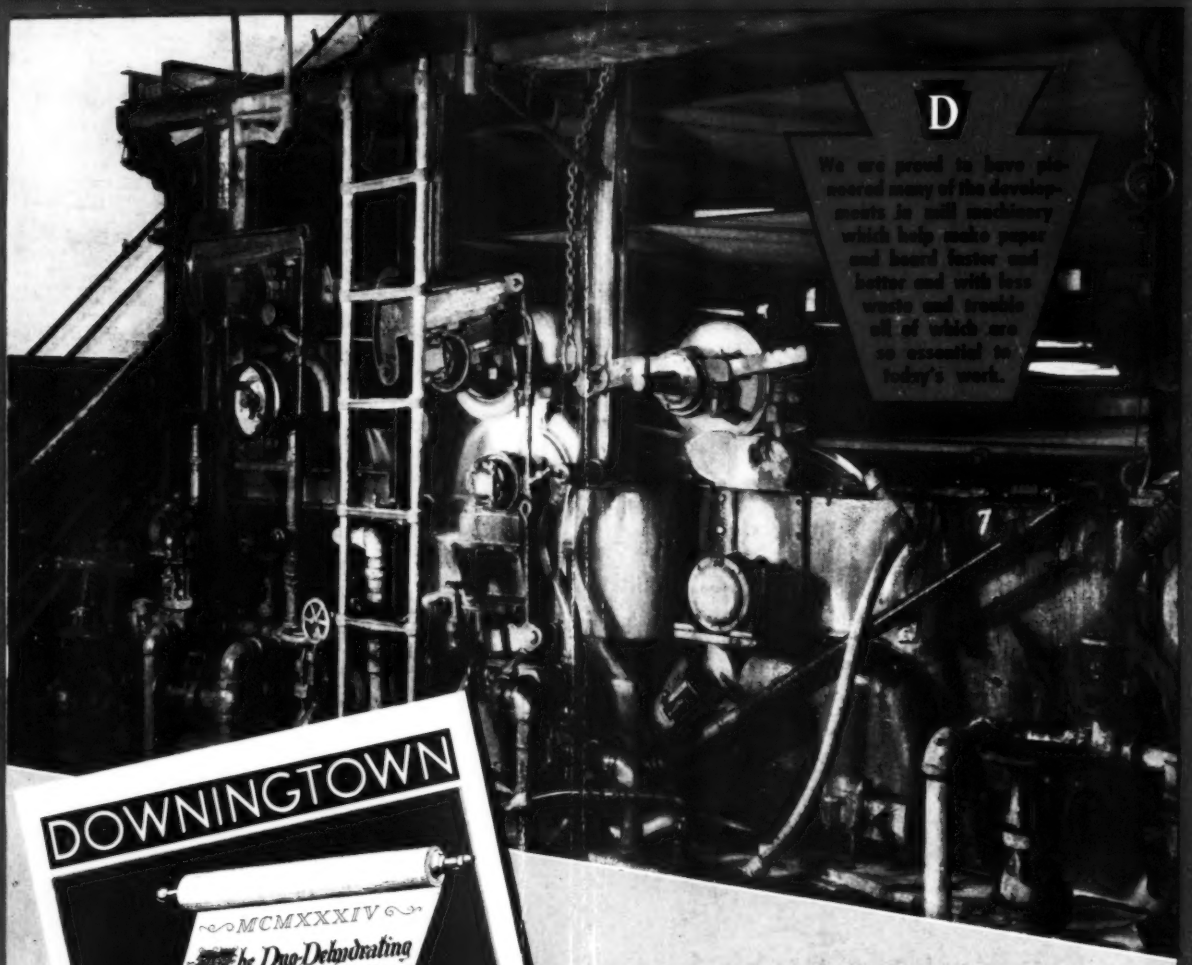
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DOWNINGTOWN
MCMXXXIV
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